Promoting Safe Infant Sleep:
The Creation and Appraisal of a Practice Guideline for Nurses

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There are so many people who have helped me get to this moment that it is hard to know where to start. I suspect no one ends up with a doctoral degree without an army standing by them – pushing, protecting, encouraging, helping, and patiently waiting for them to finish.

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Dedication

This project is dedicated to Lynn Young, a lifelong perinatal nurse, colleague, and most importantly, beloved friend. Lynn was part of the review/pilot team for this project, my personal editor (who had a special way of telling me something was not great, but always in a way that made me smile) and instrumental in pushing me towards the DNP finish line.

Lynn passed away in March of 2017 after an 8-week battle with cancer. She was 57 years old.
Abstract

**Background:** Every day in America, healthy infants are dying from sudden infant death syndrome (SIDS) and other sleep-related deaths. Once a terrifying mystery, these deaths, also called sudden unexpected infant death (SUID), are now considered preventable (American Academy of Pediatrics [AAP], 2016). SUID rates in the United States have remained stagnant and unacceptably high since the late 1990’s despite known modifiable risk factors (Centers for Disease Control and Prevention [CDC], 2017). These rates are higher than most other developed nations (MacDorman, Matthews, Mohangoo, & Zeitlin, 2014). Although prevention strategies are evidence-based and generally known and understood by nurses, studies have shown inconsistent, incorrect, or incomplete education being provided to parents and caregivers around the time of birth (Eisenberg, et al., 2015; Gaydos et al., 2015).

**Purpose:** In the fall of 2015 the Association of Women’s health, Obstetrics, and Neonatal Nurses (AWHONN) asked the author to write a practice guideline on the topic of safe infant sleep. The purpose of this project was to develop an evidence-based practice guideline for perinatal nurses and leaders. As part of the guideline development, and to establish content validity, a formal appraisal of the guideline by perinatal nurse leaders was conducted using the AGREE II (Appraisal of Guidelines for Research and Evaluation) instrument (AGREE Enterprise, n.d.)

**Approach:** The appraisal project was a two-phase, non-experimental, descriptive, mixed-methods design using an online survey approach. A convenience sample of perinatal nurse-leaders from a variety of settings was sought. Descriptive statistics were used to describe the quantitative results and qualitative data are reported verbatim due to the small number of comments returned.
**Results:** Twenty six nurse-leader participants were invited with 15 completing the phase-one survey (57.7%), and 10 completing both phase-one and two (38.5% overall response rate). One hundred percent of the participants rated the guideline as either the “highest possible” or “high quality.” All participants recommended the guideline for use, and 90% (n=9) reported having taken, or planned to take action, since reading the practice guideline. Qualitative data was generally positive with three specific suggestions for changes provided.

**Conclusions:** This practice guideline has the potential to help individual nurses improve their safe sleep knowledge, practice, and teaching strategies, as well as to help perinatal nurse-leaders conduct large scale safe sleep quality improvement projects.

**Keywords:** sudden infant death syndrome, sudden unexpected infant death, safe sleep, safe infant sleep, infant, intervention, prevention, education, practice guideline.
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Section 1: Introduction to the Problem

Despite impressive medical and technological gains over the past 100 years, the infant mortality rate (IMR) in the United States is one of the highest among developed nations (MacDorman et al., 2014). Sudden unexpected infant death (SUID) is a category of death used for all sleep-related infant deaths that occur suddenly and unexpectedly, and accounts for 14.6 percent of the IMR (Matthews, MacDorman, & Thoma, 2015). SUID includes (a) sudden infant death syndrome (SIDS), (b) accidental suffocation and strangulation in bed (ASSB), and an (c) “unknown/unspecified” category which is a cause typically assigned when an infant is found in an unsafe sleep environment, but ASSB is not known with certainty (CDC, 2017; Tyrala, 2012). SUID is the leading cause of death in the postneonatal period (28 to 365 days), with a rate of .93 deaths per 1000 live births in 2015. This equated to approximately 3700 deaths, or 10 infants per day (CDC, 2017). Globally, as with the IMR, U.S. SUID rates are higher than virtually all other developed nations (Taylor et al., 2015). These deaths are now considered preventable with the ultimate goal being to “eliminate these deaths entirely” (AAP, 2016, p. 2).

In 1992, the American Academy of Pediatrics (AAP) published its first policy statement for safe infant sleep, recommending all infants be placed supine for sleep (2016). Since then, researchers have identified other modifiable risk factors, with the current AAP policy statement now totaling 15 “safe sleep recommendations” (SSR) for parents (AAP, 2016). The SSR are considered “best-practice,” and are comparable to what other developed nations are recommending (Hauck & Tanabe, 2010).
While SUID rates in the United States dropped dramatically in the first years following the original recommendation, since the late 1990’s, rates have remained stagnant and unacceptably high (CDC, 2017, Taylor et al., 2015). Most SUIDs, including SIDS, occur in unsafe sleep environments, and there is growing concern among experts as to why parents are not adhering to the recommendations and rates are not decreasing (AAP, 2016; CDC, 2016; Gaydos et al., 2015).

Clinical Problem Being Addressed

The research-to-practice gap for many of the SSR is well over 20 years. One area of concern is with perinatal nurses who interact with parents around the time of birth. The SSR are generally known and understood by nurses, yet studies have shown either inconsistent and sometimes no education being provided to parents in the hospital at the time of birth (Eisenberg, et al., 2015; Gaydos et al., 2015). At first glance, the SSR seem simple and straightforward, yet nurses modelling the SSR and educating parents in a way that results in understanding and adherence has proven to be extraordinarily difficult (Eisenberg et al., 2015).

Researchers have further noted that parents often hear conflicting or inaccurate advice from family, friends, the media, and other healthcare providers (HCPs; Eisenberg et al., 2015; Salm Ward & Balfour, 2015). Other barriers found to SSR adherence, are parents’ unaddressed concerns about infant safety and comfort SSR, and (real or perceived) competing priorities, such as with breastfeeding, or with parents who smoke, drink alcohol, or take illicit drugs (AAP, 2016, Gaydos et al., 2015). Finally, recently published studies have demonstrated varying degrees of success with individual safe sleep interventions within the hospital environment, and researchers are now beginning to understood that simplistic or piecemeal approaches are only marginally effective (Salm Ward & Balfour, 2015). Studies are beginning to indicate that
comprehensive, multidisciplinary, organization-wide programs that have strong leadership support are more effective than traditional educational modalities (Goodstein, Bell, & Krugman, 2015; Mason, Ahlers-Schmidt, & Schunn, 2013; McMullen, Fioravanti, Brown, & Carey, 2016).

**The Purpose of the Project**

The purpose of this project was to address the identified problem area by creating an evidence-based, critically appraised practice guideline (referred to as “the guideline”) on the topic of safe infant sleep for perinatal nurses and nurse-leaders. In the fall of 2015, the author was approached by the nursing organization *Association for Women’s Health, Obstetrics, and Neonatal Nurses* (AWHONN) and asked to write an evidence-based practice guideline on the topic.

Ultimately, the goal is for the guideline to be published by AWHONN in their research journal *Journal of Obstetrics, Gynecological and Neonatal Nursing* (JOGNN), and housed on their website to be readily available to all perinatal nurses. The purpose of the guideline is to offer a concise document for nurses and nurse-leaders that would provide (a) information on SUID, the SSR, and known barriers to adherence; (b) recommendations for implementing high-quality, educational interventions/programs; and (c) leadership steps needed for implementing a safe sleep quality improvement project. This document, while not exhaustive, is meant to provide key information and resources. It might also be used by staff nurses, educators, and other HCPs, to improve individual practice as well as to help gain the buy-in of leaders of the need for an organization-level practice change initiative.

An important step in developing practice guidelines, and part of the purpose of this project, is to conduct a formal appraisal/evaluation of the document by key stakeholders prior to publication (Melnyk & Fineout-Overholt, 2015). The intent of this formal peer review is to
establish content validity of the guideline by seeking feedback from “end-users” on feasibility, usability, and its motivational impact, as well as to identify “last-minute inconsistencies or relevant evidence that might have been overlooked” (Melnyk & Fineout-Overholt, 2015, p. 190). The results of the appraisal will be used to make final revisions to the guideline prior to publication.

The Clinical Question

The clinical, or PICOT, question being addressed in this project is as follows: In nurse leaders responsible for infants in hospitals, does knowledge from reading the Safe Infant Sleep Clinical Practice Guideline prompt planning or implementation of a safe sleep quality improvement project in their organization within eight weeks of dissemination of the tool? This question addresses the quality of the practice guideline and whether it is effective in moving nurses forward in improving infant sleep practices within their organization.

This paper is divided into five sections: Section 1 is an introduction to SUID, the safe sleep recommendations, the clinical problem being addressed, and the purpose of the project. Section 2 provides a review of the literature that guided the development of the practice guideline, addresses the gaps noted in the literature, and describes the theoretical underpinnings of the project. Section 3 describes the formal appraisal process including the project design and methods, and Section 4 summarizes the data collection and analysis plans, and the results of the appraisal survey. Section 5 concludes with a discussion of the results, implications for the future, and key lessons learned.
Section 2: Review of the Literature

A comprehensive review of the literature was conducted focusing on safe sleep interventions within perinatal healthcare organizations and the barriers encountered. This section first describes the search strategy used to locate all available literature for the development of the practice guideline. Next, it provides a synthesis of what was found which was subsequently used to build the guideline, and concludes with a discussion on the theoretical and conceptual models used to provide insight for the practice guideline content and guidance for the critical appraisal process.

Search Strategy

The databases searched to address the above PICOT question were as follows: the Cumulative Index of Nursing and Allied Health Literature (CINAHL), MEDLINE, PsycINFO, the Cochrane Databases, and the National Guideline Clearinghouse (NGC). CINAHL, MEDLINE, and PsycINFO were searched together through the EBSCOhost database. Keywords used were safe sleep, sudden infant death syndrome, SIDS, sudden infant death, combined with infant, education* or intervention* (* is a wildcard to search for all terms starting with the word). Other words searched but without additional articles found were sudden unexpected infant death, barrier*, guideline*, project, and prevention. In searching using controlled vocabulary, both MEDLINE (MeSH) and CINAHL Headings suggested sudden infant death for all words related to SIDS and SUID. In a search using the CINAHL “explode” option, only the term education had this option, which was utilized rendering one additional article. Inclusion/exclusion criteria, or limiters, for all searches were set to the English language, for years 2011-2016. Dates of searches were tracked through screen shots with date stamps.
The Cochrane and NGC databases were searched to check for systematic reviews or evidence-based guidelines on the topic. Neither search rendered results useful to this project. Using the EBSCOhost database for CINAHL, MEDLINE and PsycINFO, the controlled vocabulary term sudden infant death was initially searched with 1579 results found. Next, it was combined with the Boolean phrase AND education OR intervention* which narrowed down the results to 259. Finally, the term hospital was added with the AND phrase, narrowing down the results to 58 articles. Titles were reviewed and approximately 40 articles were saved to a RefWorks folder. A second search was then conducted starting with the keyword safe sleep. This resulted in 211 articles. Next, AND infant was added, bringing the results down to 127. Finally, AND education OR intervention was added, bringing the results to 69. Titles were reviewed and approximately 35 articles saved to RefWorks. Duplicate articles were removed and abstracts were reviewed. Of the remaining articles, a total of 20 were kept. These articles were then printed and read. From these 20 articles, the 10 most applicable and high quality studies were chosen as the final “keeper” studies. Additional articles related to SUID interventions, as well as SUID/SIDS pathogenesis and background information, were located through review of article reference lists and previous searches done by the author.

The “Keeper” Studies

The 10 final “keeper” articles provide a rich overview of what is currently known to have had at least some effectiveness in implementing safe sleep educational programs, and the barriers related to the SSR and implementation efforts. Looking at study design and strength, as defined by Polit & Beck (2008), five studies are quasi-experimental (level III; Gelfer, Cameron, Masters, & Kennedy, 2013; Goodstein et al., 2015; Hwang et al., 2015; Kuhlmann, Ahlers-Schmidt, Lukasiewicz, & Truong, 2016; Mason et al., 2013), one is a descriptive mixed-methods (level
VI) design (Barsman, Dowling, Damato, & Czeck, 2015), one is a qualitative, exploratory, ethnographic (level VI) design (Gaydos et al., 2015), one is a correlational, descriptive (level 4) design (Smith et al., 2016), one is a systematic literature review (Level III; Salm Ward & Balfour, 2015), and one a narrative review/expert opinion (Level VII, Moon, Hauck, & Colson, 2016). For a detailed summary of the 10 “keeper” studies see the Evidence Table in Appendix A.

It is important to note that because of the nature of SUID prevention interventions and educating parents on a potentially life threatening condition, randomized controlled trials (RCT) are generally not appropriate due to ethical reasons such as would be created by withholding lifesaving information from a control group. Rather, most of these studies are quasi-experimental or observational type designs, measuring outcomes before and after interventions were implemented (Moon, et al., 2016). Two broad themes emerged from the literature and will be discussed in detail in the following sections: (a) the barriers surrounding the SSR, and (b) interventions for implementing successful SSR educational projects within hospitals and other perinatal healthcare settings. See Appendix B for synthesis tables of the reviewed literature.

**Literature Focusing on the Barriers**

To bridge the gap between knowledge and practice, an “in-depth understanding of the barriers and incentives [or facilitators] to achieving change in practice” is needed (Grol & Wensing, 2004, p. S57). Effective safe sleep interventions would be considered facilitators to effective practice change, while barriers would include the attitudes, beliefs, and behaviors that hinder the SSR from being heard, believed, or practiced.

While there were no studies located that looked only at barriers to the SSR, almost all addressed barriers to varying degrees. Five studies were located that addressed barriers
extensively (Barsman, et al., 2015; Gaydos et al., 2015; Smith et al., 2016; Moon et al., 2016; Salm Ward & Balfour, 2015). Parents, as well as nurses and other HCPs, have barriers to the SSR. An understanding of both is important in planning any safe sleep educational project, as interventions need to take into account and address these hurdles. Barriers commonly seen with caregivers (such as parents and grandparents) are generally related to (a) lack of knowledge or understanding of the recommendations, (b) unanswered questions about the SSR, (c) hearing conflicting or inaccurate advice, and (d) competing priorities, such as an unwillingness to quit smoking or to not bed-share (Barsman, et al., 2015; Gaydos et al., 2015; Moon, et al., 2016; Salm Ward & Balfour, 2015; Smith et al., 2016). To further the challenge, when HCPs and other hospital staff fail to consistently model safe sleep, or parents hear conflicting, inaccurate, or no advice from their HCPs, parents perceive the SSR as not being important, which then becomes another barrier to adherence (Barsman et al., 2015; Eisenberg et al., 2015).

HCPs have many of the same barriers as parents with a lack of thorough understanding of the SSR and their rationales suggested as the greatest issue (Barsman et al., 2015). Other barriers noted in the literature are lack of staff buy-in/belief, lack of time to teach, lack of resources, lack of willingness to change practice, lack of an infant sleep policy, lack of confidence in speaking to parents about the topic, and a desire to avoid conflict with parents, such as not bed-sharing or the need to quit smoking (Barsman et al., 2015; Gelfer, et al.;, 2013; Kuhlmann, et al., 2016; Mason, et al., 2013; Moon et al., 2016). Overcoming the barriers nurses struggle with will also address many of the barriers parents’ experience. If nurses are thoroughly educated and provided the resources they need, they will be more confident educating, answering questions, and addressing issues with parents (Barsman et al., 2015; Moon et al., 2016; Salm Ward & Balfour, 2015). For
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hospitals planning to implement safe sleep interventions/projects, the barriers related to their
staff need to be understood and deliberate actions taken to address them.

**Literature Focusing on Safe Sleep Educational Interventions**

While many safe sleep interventional studies have been published, the hospital-based
studies chosen for this project are all recent (2013-2016) and focus on more than just one single
intervention, for instance providing a safe sleep video. Themes that emerged from the literature
are as follows:

**Improve staff knowledge and provide ample resources.** The intervention
recommended and implemented in *every* study reviewed was that of providing detailed,
comprehensive education to all staff that care for infants. This education should include what is
known about sleep-related deaths, the rationale and evidence supporting each SSR, and answers
to the most commonly asked questions (Barsman et al., 2015; Gelfer et al., 2013; Goodstein et
al., 2015; Hwang et al., 2015; Kuhlman et al., 2016; Mason et al., 2013; Moon et al., 2016; Salm
Ward & Balfour, 2015). Perinatal nurses need to become *experts* in safe sleep and feel confident
in their discussions with parents. Along with education for staff was the recommendation for
*resources*. Most of these same studies recommended having available to staff ample resources to
assist with education, such as handouts, crib cards, room posters, and videos (Barsman et al.,
2015; Gelfer et al., 2013; Kuhlman et al., 2016).

**Be comprehensive, multidisciplinary, multifaceted, consistent, and repetitive.** Safe
sleep projects that are comprehensive, multidisciplinary, and multifaceted are more effective
with parents than piece-meal approaches such as single interventions implemented by only
certain units or individuals within the organization (Goodstein et al., 2015; Mason et al., 2013).
The goal is to have everyone in the organization modeling and teaching the same safe sleep
message. A consistent, repetitive message from multiple trusted sources has been shown to improve parental knowledge and adherence to the SSR (Barsman et al., 2015; Gaydos et al., 2015; Goodstein et al., 2015).

**Lead the change effort with strong leadership and a unified message.** All studies emphasized the need for strong leadership support. Project team members included executive and unit-level leaders, educators, as well as physicians, advanced practice, and bedside nurses. Specific recommendations related to leadership of a safe sleep project were to (a) obtain early buy-in and involvement from organizational leaders as well as from stakeholders in every area that cares for infants, (b) develop and implement infant sleep policies and protocols to reinforce and standardize practices, and (c) measure the effectiveness of the project and share results with staff and through publication (Barsman et al., 2015; Gelfer et al., 2013; Mason et al., 2013; Moon et al., 2016). Because of the barriers surrounding safe sleep, leaders should remain actively involved, be motivating, and carefully monitor the change effort to ensure sustainability (Kotter, 2007).

While no studies reported complete success implementing safe sleep interventions, many organizations have reported significant improvements in both nursing practice and parent adherence to the SSR when comprehensive, organization-wide programs are implemented.

**Gaps in the Literature**

One seeming weakness in the reviewed literature is the fact that there are no RCTs supporting the recommendations. While it is important to note that RCTs are generally not appropriate for this type of issue, it does create some limitations: because most studies were quasi-experimental or of a descriptive design, generalizability is limited. Further, because most of the studies were hospital-based, quality improvement type projects, multiple interventions
were implemented simultaneously. What this means is the actual impact of each individual intervention is unknown. What is known is the results from the implementation of the entire “bundle” of interventions. While these results are still very useful, this might create challenges for other organizations implementing their own study. Lastly, no evidence-based practice guidelines for nurses or leaders were located, reinforcing the need for the creation of a practice guideline on this topic.

**Theoretical and Conceptual Model Underpinnings**

Conceptual models and theories have the potential to inform, guide, and provide insight into difficulties that might arise in evidence-based practice change projects. In this section, three theoretical models will be described. The *ACE Star Model of Knowledge Transformation* provides a rational for the need for a practice guideline, the *Social Ecological Model* is used to create a foundation of understanding for the content of the practice guideline itself, and the *Model of Evidence-Based Practice* provides guidance for this DNP project as a whole.

The *ACE Star Model of Knowledge Transformation* (ASM) is a theoretical model being used to underscore the need for the practice guideline. This model was developed in 2004 at the University of Texas San Antonio, School of Nursing, inspired by Imogene King’s previous work (UT Health Science Center, 2017). The ASM suggests how knowledge from basic research is ultimately transformed into sustained practice change. The model describes five stages of knowledge transformation depicted as the points of a star (see Appendix C): (a) *discovery/primary research*, (b) *creation of evidence summaries* - such as evidence syntheses, systematic reviews, and integrative reviews, (c) *translation of the evidence into guidelines* – such as clinical practice guidelines that can then be used and embedded into organizational policies, protocols, or algorithms, (d) *practice integration* – which is the actual implementation of the
evidence into practice and involves the difficult task of individual and organizational change, and (e) *evaluation of the new processes* - such as the study of patient outcomes, HCP satisfaction, efficacy, efficiency, and financial impact (UT Health Science Center, 2017). Understanding this project using the model, step one is the evidence rendered from the SUID epidemiological research that has brought to light the risk factors associated with SUID. This research led to step two, the development of the general safe sleep recommendations published by the AAP. This project represents step three of the research-to-practice process: taking the safe sleep recommendations and translating them into practical and specific guidelines for nurses and nurse-leaders within hospitals and other perinatal healthcare settings. This model helps shed light on why hospitals have done poorly implementing the SSR and provides guidance for moving what is known about preventing SUID to sustainable practice change at the bedside.

The *Social Ecological Model* (SEM) is a health behavior theory that focuses on “the factors affecting behavior and provide[s] guidance for developing successful programs through social environments” (Butts & Rich, 2015, p. 246). Use of this model is evident, both explicitly and implicitly, in much of the research reviewed for this project and provides important insight for the development of the safe sleep practice guideline (Gelfer, et al., 2013; Goodstein et al., 2015; Hwang et al., 2015; Kuhlmann, et al., 2016; Mason, et al., 2013; Moon et al., 2016). This model is visually depicted as concentric circles of the person’s social environment, with those circles (or levels) closest to the person (parents in this case) having more impact, or influence, than those in distant circles (see Appendix D). The SEM suggests that individuals “dynamically interact with their environments” (Salm Ward & Doering, 2014, p. 578), thus it is imperative when planning interventions to not only focus on the parents, *but also on the different influencers* – both people and organizations, around them. This model further suggests the more messages
Parents hear from those they trust (in the circles closest to them), the more apt they are to consider and heed the recommendations given (National Action Partnership to Promote Safe Sleep [NAPPSS], 2015). As an example, a public health campaign message on a billboard that reads “babies should sleep alone, on their backs, in a safe crib,” might have some impact on parents, but not near the impact as hearing the same message from family, friends, midwife, pediatrician, and nurses in the hospital. The SEM model provides important insight into the barriers and facilitators to the safe sleep message and has informed the development of the practice guideline.

Finally, the conceptual model chosen to provide step-by-step guidance in this project is the Model of Evidence-Based Practice (EBP) Change by J.H. Larrabee. This model is comprised of six sequential steps and offers detailed elements necessary for each. The steps are (a) assess the need for change in practice, (b) locate the best evidence, (c) critically analyze the evidence, (d) design the practice change, (e) implement and evaluate the change, and (f) integrate and maintain the change in practice (Larrabee, 2004; Melnyk & Fineout-Overholt, 2015). While this model is ideal for understanding and guiding organization-level change efforts, the steps needed for the development of a practice guideline are the same. For this project, the first five steps were used to guide the practice guideline development and appraisal process, and are incorporated into the project timeline (see Appendix E).

The final desired outcome for this project is a practice guideline that is based on the best evidence currently available, is informed and guided by theory, and is critically appraised by experts, peers, and key stakeholders. In the following sections, how the guideline was developed and appraised will be discussed.
Section 3: Practice Guideline Development and Appraisal Project Design and Methods

In the spring of 2016, the practice guideline titled Promoting Safe Infant Sleep: A Clinical Practice Guideline for Nurses and Nurse-Leaders was developed. This document was created in collaboration with AWHONN leaders, and a review/pilot team. This team included six perinatal nurse-leaders, one communications expert, and one soon-to-be mother with a degree in English and graphic design experience. Once the practice guideline was drafted, reviewed by the team, and edited, it was ready for the final critical appraisal by perinatal nurse-leader “end-users.” See Appendix F for the practice guideline.

The formal appraisal of the practice guideline was a two-phase, non-experimental, descriptive, mixed-methods design using an online survey approach. This approach was chosen because online surveys are able collect a large amount of data in a rapid, cost efficient way (Terry, 2012). Disadvantages can be low response rates, and a tendency to receive superficial answers (Melnyk & Fineout-Overholt, 2015). Open-ended comments were sought to provide an opportunity for more in-depth thoughts and suggestions that might have been otherwise missed in the Likert scale survey questions (Terry, 2012).

Participants

A convenience sample of perinatal nurse-leaders with snowballing was used. Participant inclusion criterion were as follows: (a) a registered nurse residing in the United States, with (b) current or past experience with perinatal patients in a hospital or birthing center, and (c) current or past leadership experience as a perinatal nurse-executive, director, manager, clinical educator, child-birth/parenting educator, lactation consultant, or working as an advanced practice nurse, certified nurse midwife, or academic faculty with perinatal nurse experience. The sample size goal was a minimum of 20 participants, from a minimum of five organizations. While the
guideline was written for both nurses and nurse-leaders, nurses without leadership experience were excluded because of concern for their ability to accurately appraise the nurse-leader portion of the guideline. It was assumed that most, if not all, nurse-leaders would also have had at least some bedside nursing experience.

**Setting and Recruitment**

This project was not conducted within one specific organization as one goal was to have participant representation from a wide variety of settings. Thus, participants were sought from the population of perinatal nurse-leaders “at large.” Recruitment began with nurse-leaders known to the author from organizations primarily from Southern Arizona as well as from across the nation. Snowball sampling was then sought which is asking early potential participants to assist in recruiting other perinatal nurse-leaders that meet the inclusion criteria (Melnyk & Fineout-Overholt, 2015). Participants were asked to provide names and email addresses of other potential participants that met the inclusion criteria. Twenty six potential participants were identified and 38% of the invited participants were not known to the author.

**Survey Development**

The main instrument used in the appraisal survey was an adaptation of the *Appraisal of Guidelines for Research & Evaluation II* (AGREE II) tool (AGREE Enterprise, n.d.). This systematic appraisal instrument was developed to appraise practice guidelines and has been found to be both valid and reliable. It has been cited in over 100 publications (Brouwers et al., 2013). The AGREE II tool is comprised of 25 questions with room for comments throughout. It uses a 7-point Likert scale with “strongly disagree” at the low end (1) and “strongly agree” at the high end (7). The questions are grouped into domains, each addressing a different quality important to practice guidelines, as well as two questions asking about the overall quality of the
Because this project appraisal was part of the practice guideline development process (versus an already published guideline being appraised), some of the questions were confusing as written, or would have been difficult or impossible for the participant to answer correctly. Because of this, it was decided to remove one domain completely and clarify two of the questions. Twenty of the 25 original questions were used in the project survey.

The phase-one survey included (a) seven demographic questions; (b) seventeen Likert scale questions within five domains, and (c) two overall assessment and recommendation-for-use questions. In phase-two, one “yes-no” follow-up question was asked nine weeks after the initial survey invitation (an extra week was added due to week eight falling on the week between Christmas and New Year’s). Only those completing the phase-one survey were asked to complete phase-two. Eight open-ended comment boxes were provided, seven in the phase-one survey. Unstructured comment boxes were provided following each of the fives domains of questions, and three asked for specific feedback (such as regarding clarity, and actions they had taken since reading the guideline). See Appendix G for list of survey questions.

**Survey Procedure: Timeline and Protocol**

The anticipated timeframe for the entire project was two years, starting in the fall of 2015 with a planned completion date of July of 2017. The appraisal survey took place over a total of 12 weeks, starting in the fall of 2016. IRB approval was sought and the project was deemed “not humans subject research,” or exempt (see Appendix H).

The potential participants were emailed one week prior to the start of the survey from the author’s email (a university address and familiar to many of them). The project was explained and the participants invited to join the appraisal study. The practice guideline was included in
the email in PDF format. The project plan was described in the initial email, as well as in a cover letter within in the guideline, and at the beginning of the online survey. Risks were discussed and informed consent was obtained (see Appendix I). The practice guideline was made readily available throughout the appraisal process in hopes that participants would read it prior to taking the survey. The survey was then administered using an online survey software (Qualtrics) with weekly email reminders sent for the first month. Nine weeks after the initial survey, the phase-two survey was sent to those having completed phase-one. Results were aggregated for analysis, and were thus anonymous, but names of those who completed the survey were not. Details of the level of anonymity were described in the initial invitation and informed consent process. An incentive drawing for two $25 Amazon gift cards was offered to improve response and completion rates.

**Barriers, Facilitators, and Challenges**

Potential barriers identified prior to the implementation of this project were related to making a solid connection with the nurse-leaders via email (concern with using email as easy to ignore, miss, or the email going to a “junk” folder), and the time commitment needed to complete the survey. Specifically, participants were asked to (a) read the 7-page practice guideline which was estimated to take 20-30 minutes, and (b) respond to an email and click on a link to the online survey website which might have felt risky to participants. The phase-one survey was estimated to take 15-20 minutes, and phase-two to take 5-10 minutes. The total time commitment asked for was possibly one hour. Other concerns were obtaining the number of nurse-leader participants desired and the need for snowball recruitment; concern that participants might not want to complete the survey as it was not completely anonymous; and concern about
the possible poor timing of the survey which was over the 2016 holiday season (October 30, 2016-January 18, 2017) when many people take time off work.

Some facilitators to this project were (a) using an online software system which made the survey attractive and the process convenient and user-friendly, (b) offering an incentive (gift cards) to improve response rates, and (c) the author having a fairly large circle of perinatal nurse-leader connections who seemed willing to participate and provide names of other potential participants. Other actions taken to facilitate participation and improve completion rates were to make the practice guideline readily available and send email reminders to participants to complete the surveys.

Finally, one challenge anticipated in the project was finding nurse-leaders from a wide range of perinatal organizations (region, organizational size, and type of unit). One key interest, beyond the AGREE II appraisal questions, was whether the practice guideline was considered feasible and useful to a broad range of nurses, units, and organizations.
Section 4: Data Collection, Data Analysis, and Results

Data Collection

The web-based survey software *Qualtrics* (2016) was used to organize and distribute the survey, as well as to collect and manage the survey results. The survey was piloted by the review/pilot team prior to implementation and revisions were made.

For phase-one, 26 potential participants were emailed the initial invitation to join the project. One week later, a second email from the Qualtrics server was sent and included the link to the Qualtrics survey. Three weekly emails were sent over the following month.

Phase-two of the survey began at week nine and was sent to the 15 participants that completed phase-one. This survey was one “yes-no” follow-up question asking whether action had been taken or considered, based on the information provided in the practice guideline. Participants were then asked to comment on actions taken and/or on barriers observed within their organization or specific unit. Results of both surveys were exported from Qualtrics, de-identified, and placed into Excel and Word documents for analysis.

Data Analysis

Descriptive analyses were performed on the demographic and quantitative appraisal questions. Because fewer qualitative comments were obtained than anticipated, content analysis was not performed and results instead have been summarized and provided verbatim in a table.

First, the seven categorical demographic questions were summarized as frequencies and percentages. Next, the 17 AGREE II Likert scale questions, grouped into five domains, were scored both by domain as well as by individual item scores. The authors of the AGREE II instrument recommend reporting a “standardized percentage score” (SPS) for each domain. The SPS is a calculated percentage (0-100%), with 100% meaning all participants scored every...
question within the domain at the highest score (7- strongly agree), and 0% meaning all
participants scored every question within the domain at the lowest score (1- strongly disagree).

Because the 17 individual items were felt to provide insight as to specific concerns and
where revisions might be warranted, individual item results were also analyzed and are reported
as frequencies, percentages, medians, and ranges. Finally, the yes-no questions “I would
recommend this guideline for use,” and the phase-two survey question “Have you taken
action…” are each reported as frequency and percentage scores.

Results

Of the 26 nurse-leaders invited to participate in the online appraisal survey, 15 (57.7%)
completed phase-one. Of these 15, ten completed phase-two (66.7%) for a final response rate of
38.5% for both surveys.

Demographic Data

The majority of participants (60.0%) were >50 years old and had >20 years of perinatal
nursing experience (53.3%). Forty percent held Master’s degrees or higher. Characteristics of
the practice setting showed that all participants practiced in a hospital setting, with 35.3%
working in hospitals delivering >4000 infants per year and 17.7% in hospitals with <1000
deliveries per year. The most common role was that of the manager (33.3%), followed by
clinical educator, bedside nurse (both at 26.7%), and childbirth educator (20%). Finally,
locations worked within the hospital showed representation from all units that care for infants,
with the mother-baby unit being highest at 73.3%, followed by the well nursery (60%), labor and
delivery (33.3%), and the neonatal intensive care unit (33.3%). See Appendix J for summary of
demographic data. While not explicitly asked, it was noted that eight different healthcare
organizations were represented by the 15 participants who completed the phase-one survey.
Appraisal Data

The appraisal portion of the survey had a total of 20 questions: 17 Likert scale items in 5 domains, two overall assessment and recommendation questions, and one 9 week follow-up question. The SPSs for the 5 domains ranged between 92.7% and 96.1%. Domain 3 – Rigor of Development scored the lowest at 92.7%, followed by domain 5 – Applicability at 94.3% (see Appendix K). Of the 17 individual items, questions # 10, 16, and 17 had the lowest and widest range of scores (see Appendix L).

Question #18, the “overall guideline assessment” item, was scored on a 7-point Likert scale from “lowest possible quality” (1) to “highest possible quality” (7). All participants scored this item as either “highest possible quality” (60%, n=9) or “high quality” (40%, n=6). Question #19, the “I would recommend this guideline for use” item, was scored as “no” (0%), “yes” (93.3%, n=14), and “yes with modifications” (6.7%, n=1). Finally, question #20 was the phase-two follow-up question asking whether the participant had taken, or had considered taking action, on what they had read in the practice guideline. Of the 10 responses, 90% reported “yes” to taking action. See Appendix M.

Open-ended Comments

Of the 16 comments received, six were from the phase-one survey and 10 were from the phase-two survey. Overall, the comments were positive, with four explicit suggestions for revisions provided, two of which were the same. Of the 10 comments from the 8-week (phase-two) follow-up survey, eight were related to actions taken since reading the guideline, and two were related to barriers noted within their own organizations or communities. Comments are provided verbatim in Appendix N.
Section 5: Discussion, Lessons Learned, and Future Implications

The purpose of this project was to develop and formally appraise an evidence-based practice guideline on the topic of safe infant sleep for hospital-based perinatal nurses. The guideline is intended to provide guidance for individual nurses as well as for leaders interested in unit or organization-level quality improvement projects. The appraisal of the guideline was to establish content validity, as well as to assess its feasibility and motivational factor. In this final section, the appraisal process and results will be discussed, along with implications for the future and key lessons learned throughout the project.

The Appraisal Design and Plan

Generally, the appraisal portion of this project occurred as planned. The combined response rate for both phases of the survey was 38.5% which is considered roughly average for online surveys (UTexas Faculty Innovate, n.d.; Fryrear, 2015). However, it did appear that at least some of the surveys might have been hastily completed, as noted by the overall lack of comments, lack of addressing topics requested in the comments, and some survey results having the same score on every Likert-style question. Superficial responses have been noted as a common issue with online surveys (Melnyk & Fineout-Overholt, 2015), with one possible contributor to this being the length of time required to read the guideline and complete the survey. This was upwards of 50 minutes for phase-one, and 10 minutes for phase-two. Some online survey experts recommend surveys being no more than 10-20 minutes in length (Fryrear, 2015; Henning, 2013). To try to minimize this risk, the guideline was provided prior to the survey to try to encourage the participants to read the guideline prior to taking the survey.

Other design issues that might have affected the response rate were that at least two participants did not receive the Qualtrics emails, and the timing of the phase-two survey which
occurred around the Christmas holiday. The author was asked by two invited participants about the survey well after it had started. They had received the initial email, but not the email a week later from the Qualtrics server. The exact problem was never identified, however a second email was sent from the author’s work email address notifying the group of the problem. An anonymous link to the survey was included for those who might have needed it. Both participants with email issues were from the same organization. For the timing of the survey, the phase-two survey was scheduled to start immediately after Christmas and was set to be open for two weeks, including the week between Christmas and New Year’s, a week many nurse-leaders take vacation. Because of both of these issues, it was decided to leave the phase-one survey open for one more week and to start the phase-two survey after the New Year.

The Survey Results

While there were only 15 participants who completed phase-one and 10 completing phase-two of the survey, there was still good representation in terms of size of organizations, types of leaders, types of perinatal units, and locations across the country. Because one of the goals was to gather feedback from all potential types of users who might use the practice guideline, a broad range of participants was sought. Who was not formally surveyed were any advanced practice nurses (such as neonatal or pediatric nurse practitioners), certified nurse midwives (CNM), or nurse executives. Further, there were no participants from free-standing birthing centers or clinics. The practice guideline review/pilot team, however, did include a CNM and pediatric nurse practitioner, along with four other perinatal nurse-leaders.

The AGREE II appraisal questions (#1-19) all scored quite high, with the lowest scoring domain SPS being 92.7%. All participants recommended the guideline for use. In looking at the lowest scoring individual items (#10, 16, 17), it is worth noting that for all of the items, the issue
was not that the information was not addressed in the practice guideline, but rather it was not seen by the participant. For instance, the lowest scoring item #10 - “A procedure for updating the guideline is provided” is explicitly addressed at the bottom of page 8 of the guideline, and #16 - “Costs and resource implications are considered” is addressed on page 7. Item #17 - “The guideline presents monitoring/auditing criteria” is also explicitly addressed on page 7, but using the phrase “measure the effectiveness” (with examples such as crib audits) instead of the survey term “monitoring/auditing criteria.” This survey question might have been clearer if the terms had been identical, instead of synonymous.

Question #20 was the phase-two follow-up question and asked participants if they had “taken or considered taking action on [their] unit or organization to improve the infant sleep practices” since reading the practice guideline. Ninety percent of the participants answered yes to this question. All participants provided comments, though not all commented on what those changes were. This final question was meant to measure how motivating the practice guideline was, as well as to answer the PICOT question guiding this project which specifically asked about planning or implementation of a safe sleep quality QI project. While the practice guideline clearly motivated participants to take or consider taking action, there was no explicit mention of a quality improvement type project by any participant in the comments section, and only one comment that the information had been presented to their education committee “for a future in-service.” Therefore, the answer to this aspect of the PICOT question is unknown due to the phase-two question not explicitly asking about QI-type projects.

Finally, of the 18 comments, there were four comments suggesting revisions: Two participants recommended including changes from the recently updated 2016 AAP policy statement, one suggested integrating the pacifier recommendation from the Baby Friendly
Promoting Safe Infant Sleep

Initiative into the guideline, and one recommended that the guideline needed to “consider the small rural population not delivered in traditional settings.” Each of these suggestions will be looked at individually.

First, an updated AAP policy statement had been anticipated to be published in late 2016, which was about the same time the survey was to begin. This was explained in the introductory letter to the participants. The updated policy statement was indeed published at the end of October 2016, and included mainly small additions and clarifications related to swaddling, skin-to-skin, bed-sharing, room-sharing, loose bedding, and pacifiers (AAP, 2016). The guideline is planned to be revised to reflect these changes.

Second, the Baby Friendly Initiative (BFI) is a World Health Organization program that provides assistance to, and recognition of hospitals and birthing centers that provide “an optimal level of care for infant [breast] feeding and mother/baby bonding.” (Baby-Friendly USA, 2012, para. 1). The initiative has 10 steps for promoting breastfeeding which are recommendations for birthing hospitals, and are required for “Baby-Friendly” certified hospitals. One of the steps states to not use pacifiers or artificial nipples with breastfed infants (Baby-Friendly USA, 2012). This BFI recommendation is already congruent with the AAP SSR (for newborns) which recommends introducing a pacifier to breast fed infants after breastfeeding is well established, typically after three to four weeks (AAP, 2016). Finally, the last suggestion was to “consider the small rural population not delivered in traditional settings.” This recommendation was explored and determined to be too vague to be able to take action on.

Key Lessons Learned

While many lessons were learned throughout this project, the most significant observations and limitations will be discussed here. First, in creating the appraisal survey and
adapting the AGREE II instrument, two key questions (an entire domain) regarding bias and conflict of interest were removed. While this was not done without discussion and thought, it became clear later that this topic was critically important and the questions should have been adapted into a format that would have been clear for the participants. Second, the length of the guideline and the survey together was clearly too long and might have led to superficial survey responses. An alternative survey design might have been to divide up the participants and have half read the guideline and only answer the AGREE II appraisal items, and have half read the guideline and provide comments on specific subjects such as clarity and feasibility. This would have shortened the survey and might have rendered more thoughtful feedback from both. Finally, the issue of the Qualtrics survey not reaching some participants is particularly concerning as it might not have been discovered and resulted in even a lower response rate. While the author was able to work around the problem, in the future, asking participants to add Qualtrics to their email “not junk” or “SPAM” list is a possibility, or sending a follow-up email from a personal email once the Qualtrics survey is started. Technological issues need to be watched for and managed as new internet threats arise and new safeguards and mechanisms are developed to block them.

**Implications for the Future**

Translating evidence, such as the AAP safe sleep recommendations, into practice guidelines for specific population is now recognized as a critical step in transforming basic knowledge into practice (UT Health Science Center, 2017; White & Dudley-Brown, 2012). Further, peer review, pilot testing, and stakeholder review of a practice guideline are critical last steps in the development process (Melnyk & Fineout-Overholt, 2015). This practice guideline for nurses has gone through the steps needed to be considered a high-quality document, useful to
hospital nurses and nurse-leaders seeking to improve their infant sleep practices. Going forward, the practice guideline will need to be routinely and systematically reviewed and updated as new evidence is published. Practice guidelines are not meant to be viewed as static entities, but rather as living documents that need to change and evolve as knowledge on the topic increases.

Conclusion

Sleep-related infant deaths are continuing unabated, one journalist commenting, “If there was anything else killing children at this rate, there would be an outcry from the community” (Thayer & Eldeib, 2012, p. 2). The mystery that once surrounded these deaths is gone yet the U.S. has been unsuccessful at decreasing its numbers. In 2009, Dr. Edwin Mitchell, SIDS expert and researcher from New Zealand stated, “Application of what we currently know could eliminate SIDS. The challenge is to find ways of implementing our knowledge [emphasis added]” (Mitchell, 2009, p.1712). This DNP project has established the need for nurses and other HCPs to do more towards educating parents. It has provided an overview of the current literature and developed a critically appraised, evidence-based practice guideline. Nurses are in key positions to help prevent these deaths and have a responsibility to educate, model, and endorse safe sleep practices. This practice guideline has the potential to help nurses and organizations successfully educate all new parents on the life-saving recommendations and ultimately eliminate many, if not most, of these preventable deaths.
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## Appendix A

### Evidence Table

<table>
<thead>
<tr>
<th>Citation - author, year, title</th>
<th>Conceptual Framework</th>
<th>Design/Method</th>
<th>Sample/Setting</th>
<th>Major Variables Studied</th>
<th>Measurement of Major Variables</th>
<th>Data Analysis</th>
<th>Study Findings</th>
<th>Level and Quality of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neontal nurses’ beliefs, knowledge, and practices in relation to sudden infant death syndrome risk-reduction recommendations</td>
<td></td>
<td>Exploratory, prospective, descriptive design</td>
<td>Sample: Staff neonatal nurses from both units 200 surveys distributed n= 96 returned (48%)</td>
<td>Beliefs</td>
<td>Content: demographics, beliefs, knowledge, and practice</td>
<td></td>
<td>Strengths:</td>
<td>Level VI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quantitative and qualitative data collected</td>
<td>63-NICU nurses 23-TCU nurses 9-NNPs who worked in both units</td>
<td>Knowledge</td>
<td>Comparison of NICU and TCU nurses</td>
<td></td>
<td>Weaknesses:</td>
<td>-adapted from previous tool by authors Grazel and colleagues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Method: convenience sample of NICU and TCU nurses</td>
<td>Results only included responses from NICU and TCU nurses</td>
<td>Application/practice</td>
<td>Comparisons of NICU and TCU nurses</td>
<td></td>
<td>-tool tested for validity</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Purposes</td>
<td>-assess nurses’ current beliefs r/t SSP</td>
<td></td>
<td></td>
<td></td>
<td>-self-report survey of actual practices instead of direct observation</td>
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<td></td>
<td></td>
<td>-examine knowledge of SSP</td>
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<td></td>
<td></td>
<td>-small sample sizes from one hospital</td>
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<tr>
<td></td>
<td></td>
<td>-evaluate clinical application of SSP in clinically stable infants (practices)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-convenience sample</td>
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<td></td>
<td></td>
<td>-compare the above topics of NICU to TCU nurses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-very limited generalizability</td>
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(Legend located at end of the table)
### Design: Exploratory, descriptive, qualitative study of AA parents and HCPs that care for them focusing on sleep safety. Analysis part of larger study exploring information needs of low-income, first-time mothers.

### Setting: Sample: 60 AA, low-income, 1st time mothers in 8 focus groups & interviews. 20 HCPs serving same population - individual phone interviews 67 invited/20 completed

### Parent focus groups with structured general and probing questions

### HCP individual phone interview with structured general and probing questions

### Content analysis framework used, including an iterative cycle of collection, coding, and triangulation.

### Central Themes:
1. Understanding of SSPs and compliance
2. Reasons for compliance/non-compliance
3. Role of culture and family in decision making
4. Attitudes and beliefs of HCPs caring for this population

### Level of Evidence: Level VI

### USPSTF rating Quality of Evidence: fair

### Strengths:
- Clear study design, probable adequate study size for qualitative design
- Provides insight into reasons for non-compliance among population with high rates of SUID deaths as well as provider beliefs and attitudes
- Results appear valid and reliable based on study design with iterative cycles of collection, coding, and triangulation

### Weaknesses:
- Not generalizable to populations beyond subjects and setting in study
- Small sample size of HCPs
Recommendations/Conclusions
- AA mothers often are aware of SSP but choose to bed-share and place infant prone anyway.
- AA mothers appear subject to strong cultural and familial norms.
- Providers felt unable to address non-compliance beyond the AAP SSR.
- HCPs have “sense of futility” and reluctance to adapt the SSR or provide risk reducing conversations with parents who chose to not comply.
- Findings suggest need for more community involvement in counseling on SSR.
- Need to provide detailed information and rationales.
- HCPs should not ignore the controversy with bedsharing.
- HCPs should consider offering “safer” strategies for parents who chose to beds share.
- Some AA mothers are inadvertently increasing SIDS risk by substituting other practices in attempt to decrease risk.

Gelfer, P., Cameron, R., Masters, K., & Kennedy, K. A. (2013). Integrating “back to sleep” recommendations into neonatal ICU practice.

- study results appear fairly valid though confounding and bias could be unknowingly present as demographic data is missing and QI study design is weak | Weaknesses: |

None discussed

Design: Quasi-experimental/QI project to assess multifactorial interventions within hospital

Method: Comparisons of 3 phases of study: pre-, mid-, and post- implementation of interventions

Setting: 1-large tertiary care NICU


IVs (interventions) -algorithm guiding when to start SSP in NICU -crib card -education for nurses -SSP policy -guidelines for nurses -education for parents

DV-1 – in-hospital: infant sleep position, mattress firmness, extra

Measurement Tools: 1.Crib audit tool for in-hospital compliance 2.Phone interview questionnaire for parental compliance at home

Comparisons of pre-mid-post implementatio n data made by using Fisher’s exact test.

1. 80% of RNs completed SSP training
2. Attitudinal barriers persisted after training
3. Policy and education helped with attitudes and practice change
4. Crib audits – rate of supine sleep from 39% pre- to 83% post-implementation (p<.001)
   Firm mattress – 5% to 96% post (p<.001)
   Removal of soft items – 45% to 75% post (p =.001)
5. Parent compliance – rate of...

<table>
<thead>
<tr>
<th>Design</th>
<th>Quasi-experimental/QI project with nonequivalent control group design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>Convenience total deliveries: 8430 Eligible families: 7020 HD surveys filled out correctly: 1092 F/U surveys filled out correctly: 490</td>
</tr>
<tr>
<td>Setting</td>
<td>2-maternity units with 6000 combined deliveries/year</td>
</tr>
<tr>
<td>Method</td>
<td>Cross-sectional survey of parents of healthy newborns done (1) before HD and (2) at F/U 4 month well-baby visit</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>IVs (Interventions)</th>
<th>Modelling of SSP by all staff -DVD for parents -Standardized nurse education -Parental signature on acknowledgement form -High priority on culture of infant safe sleep (with every interaction)</th>
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<tr>
<th>Measurement Tools:</th>
<th>Parent survey before HD Parent survey at F/U (4 month) well-baby visit Control group data obtained from NISP study</th>
</tr>
</thead>
</table>

| Data analysis: | Chi-square and z-test of proportions Demographics of study and control groups Comparisons made: 1. Parent survey before HD |

| Study Findings: | HD versus F/U -General retention of SSP knowledge was high at F/U with the exception of room sharing advice -Intended to actual behavior differences were significantly worse in F/U data (p < .001) for always back sleeping and always in bassinet, but significantly better than NISP group |

| Study vs. F/U | F/U actual SSPs versus NISP |

| Level of Evidence: | Level IV USPSTF Rating Quality of Evidence: Fair |

| Strengths: | Large sample size USE of a control group Study design and methods clearly stated Study results appear valid and reliable though confounding and bias could be unknowingly present as study design lacks strong controls |
**PROMOTING SAFE INFANT SLEEP**

<table>
<thead>
<tr>
<th></th>
<th>Control group - Results compared to data obtained from most recent NISP* study (survey questions designed to be comparable to NISP survey questions)</th>
<th>group: NISP survey - 1046</th>
<th>safety check) DV 1. Knowledge of SSP 2. Intention to follow SSP 3. Actual SSPs @ 4 month F/U visit.</th>
<th>versus F/U visit 2. Actual SSPs at F/U visit versus control group NISP survey data</th>
<th>reported actual SSPs - demographics were dissimilar to study group in multiple areas, including NISP having higher level of education - The intervention group was significantly more likely to (a) place baby on back, (b) in a bassinet/crib, (c) with only a thin sheet, and (d) remember receiving information from a HCP (all: p&lt;.001). The NISP group offered a pacifier more often than the intervention group (p&lt;.001)</th>
<th>Weaknesses - Did not collect baseline data - Tables seemed to be missing some important data (intention data) making some interpretations difficult - Because multiple interventions were implemented at once, unable to determine which interventions had the greatest impact. - Demographics of control group significantly different than intervention group, as well as between HD and F/U groups which could have introduced bias. - Results not generalizable to other populations due to possible confounding factors from study design - Self-report surveys might not be answered truthfully</th>
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<tr>
<td>NISP survey</td>
<td>was a national benchmarking study done every year between 1992-2010</td>
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**Weaknesses**

- Did not collect baseline data
- Tables seemed to be missing some important data (intention data) making some interpretations difficult
- Because multiple interventions were implemented at once, unable to determine which interventions had the greatest impact.
- Demographics of control group significantly different than intervention group, as well as between HD and F/U groups which could have introduced bias.
- Results not generalizable to other populations due to possible confounding factors from study design
- Self-report surveys might not be answered truthfully

**Recommendations/Conclusions:**

- Hospital SSP education was shown to be feasible, well accepted by parents, and manageable to those educating
- Parents who heard SSP from HCPs 3x more likely to keep infant on back.
### Study Findings:
- **98.2%** completed audits on eligible infants
- **80%** eligible had crib cards in mid- and post-intervention periods

### Overall adherence:
- Improved 25.9% to 79.7% (p < .001)
- Supine – 80.4% to 95.8%
- Flat – 69.6% to 99.2%

### No positioning devices:
- 73.2% to 94.9%
- 40.9% to 85.6%

### Weaknesses:
- Might have missed night shift
- No follow up with parents after DC
- 

### Strengths:
- Study showed SSP can be standardized and integrated into routine care in the NICU setting
- Study results appear valid
- Large sample size
- Actual SSP behaviors audited, not self-report survey.

### Recommendations/Conclusions:
- SSP modelling and education should begin weeks or months before DC from NICU
- DC of high-risk infants requires greater standardization
- DC efforts should include collaborative multi-disciplinary efforts


### Study Findings:
- Demographics of each hospital site provided

### Comparisons:
- Overall safe sleep (p<.001)
  - Pre: 4.9%
  - Post: 31.2%

### Safe position – overall sleep
  - (p<.001)

**Level of Evidence:** Level IV

**USPSTF rating Quality of Evidence:** Fair

**Strengths:**
- Large sample size of all sites combined.
- Measured actual behaviors, not self-report survey.

**Weaknesses:**
- Convenience sample
- Looked only at nursing practices in hospital
- No follow up with parents after DC
- So unable to measure whether intervention led to improved adherence at home
- Intervention period short -2 weeks - Crib audits occurred during day. Might have missed night shift differences

---

### PROMOTING SAFE INFANT SLEEP

|---|
| **Methods:**
| Study design: Cross-sectional, Quasi-experimental/QI project to assess bundled SSR interventions (pre & post intervention crib audits)
| Setting: Two level-3 NICUs with 4400 combined deliveries/yr. with ~635 admissions/yr to NICU
| Sample: convenience
| N= 395 eligible for SSP intervention
| 388 (98.2%) completed audits
| - 112 pre intervention
| - 158 mid
| - 118 post
| IV: (interventions)
| - Initiation of SSP algorithm
| - Nsg education
| - 1:1 nsg education at bedside of algorithm and SSP
| - Crib cards
| - Large posters with SSP in pt. rooms and staff lounge
| - SSP refresher sessions
| DV: - supine sleeping
| - flat crib
| - no positioning devices in crib
| - no toys, comforters, quilts in crib
| All surveys completed over 8 months divided into pre-, mid-, and post-intervention periods
| **Data Analysis:**
| Descriptive data analysis: percentages calculated for categorical variables
| **Comparisons made:**
| Overall and adherence to each of 4 components across 3 time periods using “logic link generalized linear models for binomial outcomes” (p.864)
| **Study Findings:**
| 98.2% completed audits on eligible infants
| 80% eligible had crib cards in mid- and post-intervention periods
| Overall adherence improved 25.9% to 79.7% (p < .001)
| Supine – 80.4% to 95.8%
| Flat – 69.6% to 99.2%
| No positioning devices – 73.2% to 94.9%
| No toys, comforters, quilts in crib – 40.9% to 85.6%
| (all with p < .001) | **Level of Evidence:** Level IV

**USPSTF rating Quality of Evidence:** Fair

**Strengths:**
- Study showed SSP can be standardized and integrated into routine care in the NICU setting
- Study results appear valid
- Large sample size
- Actual SSP behaviors audited, not self-report survey.

**Weaknesses:**
- Convenience sample
- Looked only at nursing practices in hospital
- No follow up with parents after DC
- So unable to measure whether intervention led to improved adherence at home
- Intervention period short -2 weeks - Crib audits occurred during day. Might have missed night shift differences

**Recommendations/Conclusions:**
- SSP modelling and education should begin weeks or months before DC from NICU
- DC of high-risk infants requires greater standardization
- DC efforts should include collaborative multi-disciplinary efforts

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|---|
| **Methods:**
| Study design: Non equivalent group quasi-experimental study/QI project to assess a bundled SSP intervention
| Setting: Multicenter project, in 8 pediatric hospitals in hospital association
| Sample: convenience sample from each hospital
| Infants: 0-6 months
| n=264 pre intervention
| n=234 post
| IV: bundled interventions which differed at each hospital - education for staff- s/s (this was the only mandated intervention) - staff written declaration of practice form
| Measurement Tools:
| 4-item tool measuring sleep location, position, and environment as well as caregiver presence
| Data Analysis:
| Frequencies and percentages calculated for all DVs
| Comparisons between pre- and post-
| Study Findings:
| Demographics of each hospital site provided
| **Comparisons:**
| Overall safe sleep (p<.001)
| - Pre: 4.9%
| - Post: 31.2%
| Safe position – overall sleep (p<.001) | **Level of Evidence:** Level IV

**USPSTF rating Quality of Evidence:** Fair

**Strengths:**
- Large sample size of all sites combined.
- Measured actual behaviors, not self-report survey.

**Weaknesses:**
- Convenience sample
- Looked only at nursing practices in hospital
- No follow up with parents after DC
- So unable to measure whether intervention led to improved adherence at home
- Intervention period short -2 weeks - Crib audits occurred during day. Might have missed night shift differences

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**Level of Evidence:** Level IV

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### Study Findings:
- Demographics of each hospital site provided

### Comparisons:
- Overall safe sleep (p<.001)
  - Pre: 4.9%
  - Post: 31.2%

### Safe position – overall sleep
  - (p<.001) | **Level of Evidence:** Level IV

**USPSTF rating Quality of Evidence:** Fair

**Strengths:**
- Large sample size of all sites combined.
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**Weaknesses:**
- Convenience sample
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**Level of Evidence:** Level IV

**USPSTF rating Quality of Evidence:** Fair

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- Large sample size of all sites combined.
- Measured actual behaviors, not self-report survey.

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### Study Findings:
- Demographics of each hospital site provided

### Comparisons:
- Overall safe sleep (p<.001)
  - Pre: 4.9%
  - Post: 31.2%

### Safe position – overall sleep
  - (p<.001) | **Level of Evidence:** Level IV

**USPSTF rating Quality of Evidence:** Fair

**Strengths:**
- Large sample size of all sites combined.
- Measured actual behaviors, not self-report survey.

**Weaknesses:**
- Convenience sample
- Looked only at nursing practices in hospital
- No follow up with parents after DC
- So unable to measure whether intervention led to improved adherence at home
- Intervention period short -2 weeks - Crib audits occurred during day. Might have missed night shift differences
Promoting Safe Infant Sleep


**Design:** Quasi-experimental/QI project (PDSA cycle) to assess bundled SSR interventions (pre & post-intervention crib survey)

**Setting:** One hospital with 6000 deliveries/year, ~5500 well newborns

**Sample:** convenience -sleeping well NBs -parents

**IV:** (bundle of interventions) -nursing education -development of nsg policy -use of SSP declaration form with nurses

**Measurement Tools:**
- Data collection tool used to assess NB sleep environment, location, and position

**Data Analysis:**
- Not clearly defined

**Study Findings:**
- Baseline data: 25% of NBs were "safe" (combined variables) -22% not supine
- 82% in unsafe environment

**Level of Evidence:** Level IV

**Quality of Evidence:** fair

**Strengths:**
- actual behaviors measured versus self report
- obtained rich descriptive data of parent perception of intervention

<table>
<thead>
<tr>
<th>Exclusions</th>
<th>Intervention using a pre &amp; post intervention survey</th>
<th>Evaluation tool – requesting feedback on barriers to implementation from staff</th>
<th>Intervention data made using X² tests or Fischer’s exact test when data results were &lt; 5 subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>infants in NICU, PICU, or maternal-newborn units. Infants with certain medical conditions or equipment</td>
<td>-new/revised policy</td>
<td>-Safe location – overall (p=.692)</td>
<td>-pre-86.5% -post-96.2%</td>
</tr>
<tr>
<td>-wearable blankets</td>
<td>-Safe Environment – overall sleep (p&lt;.001)</td>
<td>-pre-88.6% -post-89.7%</td>
<td></td>
</tr>
<tr>
<td>-storage space</td>
<td>-Safe Environment – overall sleep (p&lt;.001)</td>
<td>-pre-6.4% -post-34.6%</td>
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<tr>
<td>-educational video for parents</td>
<td>-Feedback on Barriers to Implementation</td>
<td>-cultural and language -lack of staff buy-in/compliance -lack of time -storage space -caregiver compliance/co-bedding -temp control and clothing options -technology</td>
<td></td>
</tr>
<tr>
<td>-posters in rooms</td>
<td>-Feedback on Barriers to Implementation</td>
<td>-convenience sample -data collection done “whenever” there was (trained) staff available. Potential for lack of interrater reliability or other bias. -short time frame did not allow adequate data collection as most hospitals unable to obtain goal of 41 infants -nursing staff aware of being watched (Hawthorne effect) -lack of infant/parent demographics -inconsistent implementation of bundle – every site different thus unable to identify which interventions had most impact</td>
<td></td>
</tr>
<tr>
<td>-parent handout for home provided</td>
<td>-Feedback on Barriers to Implementation</td>
<td>-written policy was absent in top performing hospital -unknown whether sustained change occurred (often 1-2 years needed) -strategies to overcome barriers: purchase wearable blankets or pajamas, engaging in community education re SSP, storage containers for items found in cribs, provide additional education regarding dangers of wedges and positioners -Need consistent messaging and modeling of SSP in hospital setting</td>
<td></td>
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</tbody>
</table>

- convenience sample -data collection done “whenever” there was (trained) staff available. Potential for lack of interrater reliability or other bias. -short time frame did not allow adequate data collection as most hospitals unable to obtain goal of 41 infants -nursing staff aware of being watched (Hawthorne effect) -lack of infant/parent demographics -inconsistent implementation of bundle – every site different thus unable to identify which interventions had most impact

**Recommendations/Conclusions:**
- caregivers seem to be receiving inconsistent messaging from HCPs -Hospitals may not be providing consistent messaging -study confirms hospitals do not fare well in promoting safe sleep messages -additional efforts are needed to improve safe sleep compliance in hospitals -written policy was absent in top performing hospital -unknown whether sustained change occurred (often 1-2 years needed) -strategies to overcome barriers: purchase wearable blankets or pajamas, engaging in community education re SSP, storage containers for items found in cribs, provide additional education regarding dangers of wedges and positioners -Need consistent messaging and modeling of SSP in hospital setting
### Method:
PDSA cycle utilized

Comparison of baseline and post implementation data of DVs and parent survey results.

Baseline data collected for 2 week periods by 2 hospitalists, 1 medical student, and 1 resident (over total of 4 months)

Post Implementation data collected over 2 months by 2 staff nurses

Parent feedback on the intervention collected on day of discharge via a survey.

<table>
<thead>
<tr>
<th>DV:</th>
<th>Post implementation data:</th>
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<tbody>
<tr>
<td>-Sleep location</td>
<td></td>
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<tr>
<td>-Sleep position</td>
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<tr>
<td>-Items in the crib</td>
<td></td>
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<tr>
<td>-58.2% of NBs “safe”</td>
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<tr>
<td>-10.8% unsafe position/location</td>
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</table>

<table>
<thead>
<tr>
<th>DV:</th>
<th>Mother survey data:</th>
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</thead>
<tbody>
<tr>
<td>-98% found video helpful</td>
<td></td>
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<tr>
<td>-91% satisfied with SSP information received</td>
<td></td>
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<tr>
<td>-5% answered all SSP knowledge questions correctly</td>
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<tr>
<td>-32% answered 5/6 correctly</td>
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<tr>
<td>-96% planned to place supine</td>
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<tr>
<td>-100% planned to use a crib and not co-sleep</td>
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<table>
<thead>
<tr>
<th>DV:</th>
<th>Parent survey tool</th>
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<tbody>
<tr>
<td>-spreadsheet and analyzed using PAS-W 20.0</td>
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</table>

<table>
<thead>
<tr>
<th>DV:</th>
<th>Key Themes Reviewed:</th>
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<tbody>
<tr>
<td>-Interventions focused on health messaging</td>
<td></td>
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<tr>
<td>-Interventions focused on education of professionals</td>
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</table>

<table>
<thead>
<tr>
<th>DV:</th>
<th>Level of Evidence:</th>
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<tbody>
<tr>
<td>-Level VII</td>
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</tbody>
</table>

### Weaknesses:
- single site, single population
- convenience sample
- pre and post bundle data collected by different people (RNs) and disciplines introducing potential bias
- researcher deemed suction bulb “unsafe” item in crib while not AAP recommendation. Might have skewed results of safe versus unsafe environment
- intervention focused only on nursing staff (not multidisciplinary)
- No long-term assessment of sustainability of intervention
- may have confounding variables such as family interventions
- no home F/U of parents actual behaviors
- results not generalizable

### Recommendations/Conclusions:
- Nursing policy to improve consistency of practice
- Begin education early in hospital stay
- Bundled approach helped increase consistency of teaching between nurses and ensured SSP message delivered
- Parents were receptive to the SSP education
- HCPs should deliver consistent, varied, and multiple SSP messages “at all encounters, beginning prenatally, and continuing throughout the NBs first few months of life (p.973).”

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**Moon, R.Y., Hauck, F.R., & Colson, E. R. (2016).** *Safe infant sleep interventions: What is the evidence for successful behavior change?*

Barriers and incentives for EBP change model by Grol &

Design: Narrative review of literature/expert opinion

Method: Not applicable

Key Themes Reviewed:
- Interventions focused on health messaging
- Interventions focused on education of professionals

Level of Evidence: Level VII

Quality of Evidence: fair.

Strengths:
- expert opinion of leading SIDS researchers (AAP SSR authors)
| Wensing, 2004  | Narrative discussion of SSP interventions and behavior change based on conceptual framework by Grol & Wensing, 2004 | Interventions focused on breaking down barriers  
Interventions focused on utilizing culture and tradition  
Interventions focused on legislation and regulation | -theoretical basis for opinions  
-concise overview of barriers to SSP adherence in parents, caregivers, HCPs, and HC organizations  
**Weaknesses:**  
-expert opinion of literature review  
**Recommendations/Conclusions:**  
**Interventions focused on health messaging**  
-people more likely to follow recommendation if understand the rationale  
-message should answer a question that creates a barrier (such as why infants do not choke more on back)  
-messages should promote fact that every infant is at risk  
**Interventions focused on education of professionals**  
-need to create a culture of safe infant sleep  
-nurses are role models for better or for worse  
-infants born premature or sga are at higher risk. NICU modeling of SSP and education critical  
-QI projects should be performed to document effectiveness of SSP interventions/programs  
**Interventions focused on breaking down barriers**  
-examples: Cribs for Kids program, Bedtime Basics for Babies, Halo sleepsacks,  
**Interventions focused on utilizing culture and tradition**  
-should “utilize tradition and norms that are protective for health” (p.72)  
-examples of projects in NZ, Finland, American Indians, US baby showers  
**Interventions focused on legislation and regulation**  
-adherence to guidelines is more

Purpose: synthesis and analysis of intervention effectiveness

Method: PubMed, CINAHL, PsychINFO, and Google Scholar searched. Reference lists of selected articles searched

Inclusion criteria: -Peer-reviewed -1990-2015 -described an intervention or SSP education program -intervention results reported | Sample: initial search results=1070 n=29 articles met criteria and were reviewed | Focus areas of articles: -caregivers -HCPs -peers -child care providers

Common behaviors discussed: sleep location, position, environment, removing items from environment, breastfeeding, smoking, pacifier use, knowledge, | Measurement Tools:

Structured data extraction sheet utilized collecting:
-location -target audience -targeted behaviors -intervention description -study design -study method -intervention effects -study limitations | Data Analysis:

Results summarized in table form and using a "narrative synthesis process" (p.3)

Common Themes:

- sleep position
- sleep location
- sleep environment
- breastfeeding
- smoking
- pacifier use
- knowledge

Categories of Results Synthesized:

Study location, targeted audience, and behaviors

Evaluation of design and study methods

Intervention strategies such as printed materials, crib cards, DC instructions, videos, posters, demonstrations with dolls. Most studies implemented multiple components

For HCP and Organizations – such as policies, guidelines for NICU, training, in-service education, train the trainer, eliciting signatures from nurses, -predicting barriers...

Intervention effects, specifically on sleep position, location, items in crib, sharing

Level of Evidence: Level III

Quality of Evidence: good

Strengths: Table provided with all studies in synthesis providing design/method, N sizes, and other study details.

Solid foundation of (most) all intervention implemented in last 25 years

Weaknesses

-Limited search, EMBASE not searched, grey literature not searched.
- quality assessment criteria not applied

Recommendations/Conclusions:

-1/2 of studies focused on postpartum mothers as “captive audience” while in hospital
-timing of interventions important as some studies showed changes in intention prenatally and then actual behaviors postnatally
-author recommends a “dosed” approach so barriers can be discussed
-anticipate barriers...
-repeated messaging increases the likelihood of adherence
-most interventions utilized multiple...
PROMOTING SAFE INFANT SLEEP

- Meta-analysis not done due to "large variability in interventions, study methods, and outcomes of the studies identified" (p. 2)


| Design: | Correlational descriptive, stratified, 2-stage, clustered design |
| Setting: | Mothers sampled from 32 hospitals in the US. |
| Sample: | "nationally representative" -6011-eligible -5354-approached -3983-agreed -3297-surveys completed -3218-analyzable surveys (80.9% of those enrolled) |
| Content Explored: | 1. Assessment of infant care practices: - Feeding: BF, Formula, both. - Sleep Location: Parent room, own bed, parent bed, separate room, - Sleep surface: crib, bassinet, adult bed, etc. 2. Assessment of the advice received for feeding, sleep location, and sleep surface |
| Measurement Tools: Self report Survey - via phone or email |
| Data Analysis: | SAS procedures for complex survey designs were utilized. Adjusted odds ratios and 95% Cis for associations between demographics, infant care practices, and advice received. |

Study Findings:

- Results provided on: - Demographics and prevalence of BF, sleep location, and sleep surface reported - Associations between demographics and feeding and sleep location practices - Associations between sleep locations, sleep surfaces, and feeding practices - Summary of advice received on topics - Associations between advice score and related and unrelated practices

Key findings:

- 30.5% - exclusive BF - 29.5% - partial BF - 65.5% - usually room-share without bedshare - 20.7% - bedshare - Bedsharing more likely to be with exclusive or partial BF mothers - 58.2% Excl BF and -70% of

Information with others, other behaviors such as smoking, bed-sharing, clothing, breastfeeding, pacifier use, components, variety of venues, changes in policy…

- Good discussion of barriers and reasons for poor adherence to SSP.

Level of Evidence: Level IV

Quality of Evidence: Good

Strengths:

- tool tested for validity and test-retest reliability
- large sample size – "nationally representative"

Weaknesses:

- Self report survey
- Data not collected as to why parents chose not to participate

Recommendations/Conclusions:

- Many have not adopted the SSR
- Need to hear advice from multiple sources
- Many able to BF without bedsharing
- Advice to adhere to both recommendations did not decrease BF rates
- Should specifically advice parents to not bed share regardless of feeding type
- Should "promote a common understanding of relevant recommendations among family members, nursing staff, and the
email 2-4 months after birth. Recruitment occurred in 3 cycles/clustered time periods over 38 months (1 cycle per year)

NonBF usually room-share without bedsharing -receiving advice from multiple sources increases adherence to SSR in a dose related fashion -receiving advice regarding sleep practices did not affect feeding practices

media to ensure consistent messages from multiple sources

**Legend:**  AA-African American; AAP-American Academy of Pediatrics; BF-breastfeed/fed; DC-discharge; DV-dependent variable; Excl-exclusive; F/U- follow up; HC-healthcare; HCP-healthcare provider; HD-hospital discharge; IV-independent variable; NB-newborn; NICU-neonatal intensive care unit; NISP-National Infant Sleep Position; NNP-neonatal nurse practitioner; Nsg-nursing; QI-quality improvement; r/t-related to; SIDS-sudden infant death syndrome; SSP-safe sleep practices; SUID-sudden unexpected infant death; TCU-transitional care unit
Appendix B

Synthesis Tables

Table 1 – Study Design and Setting

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<td>Outpatient/general population</td>
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Table 2 – Barriers Examined

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<td>Nurse beliefs, knowledge, behaviors</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>Parent beliefs, knowledge, behaviors</td>
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<td>Legislation and/or organizational</td>
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### Table 3 – Safe Sleep Interventions Examined

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<tbody>
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<td><strong>Intervention examined</strong></td>
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<tr>
<td>- guidelines for positioning supine</td>
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<tr>
<td>- crib card</td>
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<td>- education for nurses/staff</td>
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<td>- education for parents-group/1:1/online</td>
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<td>- infant sleep policy</td>
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<td>- parent sign form of acknowledgement</td>
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<tr>
<td>- create a culture of infant sleep safety – frequent checks and discuss.</td>
<td>X</td>
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<tr>
<td>- large posters in patient rooms</td>
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<td>Provide risk-mitigating information to those who chose to not adhere to recommendations</td>
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<td>Share QI data with staff</td>
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ACE Star Model of Knowledge Transformation Model: Cycle explains the major steps basic or bench knowledge needs to go through for sustained practice change at the bedside (UT Health Science Center, 2017).
Appendix D

Social-Ecological Model

Social-Ecological Model: Levels of influence related to acceptance of safe sleep knowledge and adherence to SSR. Adapted from National Action Partnership to Promote Safe Sleep (NAPPSS, 2015).
Appendix E

Project Timeline

**PICOT question:** In nurse leaders responsible for infants in hospitals, does knowledge from the *Safe Infant Sleep Practice Guideline* prompt planning or implementation of a safe sleep quality improvement project in their organization within eight weeks of dissemination of the tool?

**Committee Members:** Dr. Laura Karnitschnig (Chair), Dr. Melissa Goldsmith, Dr. Connie Miller

<table>
<thead>
<tr>
<th>Steps in <em>Model for EBP Change</em> (Larrabee, 2009 (as cited in Melnyk &amp; Fineout-Overholt, 2015))</th>
<th>Project Components</th>
<th>Timeframe</th>
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| **Step 1: Assess the need for change in practice**                                      | ✅ Develop a vision for change  
|                                                                                         | ✅ Evaluate current practice (internal evidence)  
|                                                                                         | ✅ Identify and narrow topic  
|                                                                                         | ✅ Identify key stakeholders (hospital/healthcare organization nurses and leaders)  
|                                                                                         | ✅ Develop and refine PICOT question  
|                                                                                         | ✅ Begin work on practice guideline (PG) with Association of Women’s Health Obstetrics and Neonatal Nurses (AWHONN) | Fall Semester 2015 |
| **Step 2: Locate the best evidence**                                                    | ✅ Develop search strategy and conduct search  
|                                                                                         | ✅ Continue work on PG with AWHONN | Spring Semester 2016 |
| **Step 3: Critically analyze the evidence**                                             | ✅ Critically appraise, evaluate, and synthesize best evidence  
|                                                                                         | ✅ Develop project idea, outcomes, evaluation plan  
|                                                                                         | ✅ Conduct SWOT analysis to assess feasibility, risks and benefits of the PG  
|                                                                                         | ✅ Continue work on PG based on synthesis of best evidence  
|                                                                                         | ✅ Develop initial project timeline | Spring Semester 2016 |
| **Step 4: Complete the PG and appraisal tool, design appraisal project, and implementation plan** | ✅ Develop a detailed/fine-tuned project timeline including methods and tools to be used  
|                                                                                         | ✅ Finalize PG in collaboration with AWHONN  
|                                                                                         | ✅ Develop “user-friendly” version of PG appropriate for distribution for peer/expert appraisal  
|                                                                                         | ✅ Develop data measurement (appraisal) tool based on AGREE II instrument.  
|                                                                                         | ✅ Set up Qualtrics Survey Software  
|                                                                                         | ✅ Network and discuss project with stakeholders (perinatal leaders) to obtain buy-in of project.  
|                                                                                         | ✅ Obtain IRB approval  
|                                                                                         | ✅ Gather list of initial leaders who have agreed to critique PB | Summer 2016 |
| **Step 5a: Project Implementation: Appraisal of PG & data collection**                  | ✅ Assess, identify, and eliminate barriers to appraisal process  
|                                                                                         | ✅ Conduct appraisal of PG utilizing convenience sample of perinatal nurse leaders with snowballing | Fall 2016 |
| Step 5b: Evaluation of data and revise PG as needed | ✓ Analyze data  
✓ Provide results to AWHONN leadership  
✓ Revise CPG based on appraisal results | Spring 2017 |
|---|---|---|
| Step 6: Integrate PG into practice – Share and disseminate tool | ☐ Submit PG for publication to leadership or perinatal nursing journal (if not published by AWHONN).  
✓ Presentation (oral or poster) at professional nursing conference  
✓ Celebrate the lives of infants saved from a sleep-related, preventable death! | Summer 2017 |
Appendix F

The Safe Infant Sleep Practice Guideline

About this Clinical Practice Guideline

Dear Perinatal Nurse-Leader,

Thank you for your willingness to read and provide critical feedback on this clinical practice guideline (CPG). The goal of this project is two-fold. First, it is to develop an evidence-based practice guideline for all levels of nurses and nurse leaders. It is meant to be succinct and practical, while at the same time provide enough detail to guide leaders in implementing their own safe sleep quality improvement project. Second is to conduct a formal appraisal/critique of the guideline. This step provides an opportunity to identify and correct weaknesses, inconsistencies, or other problems found in the document. The formal appraisal is also part of my DNP doctoral project at Northern Arizona University.

In about one week I will send you an email with this CPG and a link to the online survey. The survey will take approximately 15 minutes to complete. A follow-up survey with one question will be sent 4-6 weeks later. All survey responses will be aggregated (anonymous). The goal is to gather feedback and end with a final tool that is informative, motivating, and useful. Also, some fun incentives (drawing for one of three $25.00 gift cards) will be offered to those who participate!

Thank you so much for your willingness to participate and offer your suggestions and feedback,

Sharon C. Hitchcock, MSN, RNC

Sharon C. Hitchcock, MSN, RNC-MNN
Clinical Instructor, University of Arizona College of Nursing
DNP Doctoral Student, Northern Arizona University
Call (520) 404-0148
sharonh@cox.net

Sharon Hitchcock is faculty at the University of Arizona with over 30 years bedside nursing experience. In 2012, she published an article in the journal Nursing for Women's Health titled "Ending Safe Infant Sleep: A Call to Action." In 2013, she presented a 4-continuing education webinar at AWHONN on safe sleep and in 2014 published a series of articles for the parenting magazine Modern Mom & Baby. Sharon represents AWHONN on the National Safe Sleep Partnership for Safe Sleep (NSPS) Board, is a Safe Sleep champion, and member of the Pink County Child Fatality Review Board. Currently, she is working to complete a doctoral degree at Northern Arizona University and is awaiting the birth of her first grandchild, due in late 2016.
PROMOTING SAFE INFANT SLEEP
A Clinical Practice Guideline for Nurses and Perinatal Nurse-Leaders

Introduction
In 2009, New Zealand researcher Dr. Edwin Mitchell declared, “SIDS is preventable. Application of what we currently know could eliminate SIDS.” The challenge is to find ways of implementing our knowledge.” E12] The American Academy of Pediatrics (AAP) echoes a similar thought, stating the ultimate goal being to “eliminate these deaths entirely” (p.1050). Education is key in preventing these deaths and the need to promote safe sleep practices to all parents with infants.

Magnitude of the Problem
Sudden unexpected infant death (SUID) is the death of an infant that occurs suddenly and unexpectedly and whose cause of death is not immediately known to the parents. Prior to investigation, SUID is the leading cause of death in infants one to 12 months of age. These deaths, also referred to as sleep-related infant deaths include sudden infant death syndrome (SIDS), accidental suffocation and strangulation in bed, and an “unspecified” category. SUID is now the term commonly used for all unexpected sleep-related infant deaths. Some important facts to know are:
- SUID is the leading cause of death in infants one to 12 months of age. These deaths, also referred to as sleep-related infant deaths include sudden infant death syndrome (SIDS), accidental suffocation and strangulation in bed, and an “unspecified” category.
- Most SUIDs occur in unsafe sleeping environments with more than half of SUID deaths occurring in bed-sharing situations.
- Racial disparities are related to SUID, with AAPI infants having higher SUID rates compared to non-Hispanic white infants.

Safe Sleep Recommendations
The 2011 AAP policy statement on SIDS includes 14 safe sleep recommendations (SSR) for parents. (see Table 1):
- The highest impact recommendations are (a) back only positioning, (b) room sharing without bed-sharing, and (c) in a safe and empty crib.
- Protective recommendations include breastfeeding, primary use, room sharing, and immunizations, each decreasing the risk of SUID by as much as 50%.
- The Academy of Breastfeeding Medicine has published recommendations for bed-sharing. These recommendations are similar to the AAP SSR.

Table 1: AAP Safe Sleep Recommendations

- Back is best for every sleep
- Use of a firm sleep surface
- Room share without bed sharing
- Avoid smoking exposure during pregnancy and after birth
- Avoid overheating
- Avoid having a bottle or pacifier
- Do not include home monitoring devices
- Avoid commercial products marketed to prevent SIDS
- Breastfeeding
- Positioning and sleep timing during pregnancy and after birth

Part 1: Recommendations for Nurses Teaching and Modeling Safe Sleep
Studies have shown safe sleep education is welcomed and desired by parents, but many parents are receiving no safe sleep advice from their healthcare providers, or are hearing conflicting or incorrect advice.[13] Studies show improved adherence to the SSR when parents are provided:
- Consistent, repetitive messaging from multiple trusted sources.[12]
- Simple, clear, yet detailed discussions of each recommended intervention including rationale.[12]
- Consistent role modeling by all on the healthcare team.[13] Parents tend to imitate what they observe in the hospital over what they are advised to do.[13]

Safe sleep education should be offered throughout the perinatal period, starting prenatally, using multiple formats, such as formal and informal discussions, crib cards, handouts, posters, and videos (see Figure 3).

- An effective teaching strategy is the “ABCs of Safe Sleep” (see Figure 3).
- East teaching strategy is the “ABCs of Safe Sleep” (see Figure 3).
- Within the hospital, discussions should start at birth and time allotted for more detailed conversations before discharge. All parents should be explicitly asked about their infant’s sleep, and advised to take safe sleep measures.

- Collaborative, patient-centered, and reflective listening approaches are recommended.[13]
- Unsafe behaviors observed in the hospital setting, such as overcrowding, bed-sharing, or extraneous items in the crib, should be promptly addressed. These situations can be handled as opportunities for further education.[13]
Understanding Reasons for Lack of Parental Adherence

Understanding the barriers parents have to the SSR can help the nurse be prepared to address and correct misinformation. Some of the reasons for lack of adherence are:

- Concerns and unanswered questions about infant choking, respiratory distress, safety, and physical comfort
- Making incorrect or inaccurate advice from healthcare providers (HCPs), family, friends, and other sources
- Assessing priorities such as a desire for bonding or uninterrupted sleep, ease of breastfeeding, or such parents unwilling to quit smoking

Part 2: Nurse-Leaders Implementing Comprehensive Safe Sleep Programs

The research-to-practice gap for many of the safe sleep recommendations has exceeded 20 years. SUID experts have described this as extraordinarily complex and paratausal nurse-leaders with minimal research-based programs and similar recommendations. Many hospitals do not have infant sleep policies which can lead to inconsistent safe sleep practices among staff,

Many hospitals do not have infant sleep policies which can lead to inconsistent safe sleep practices among staff:

- There is resistance to change policies among some hospitals despite knowing the recommendations.
- Many hospitals do not have (or follow) infant sleep policies or guidelines which can lead to inconsistent safe sleep practices among staff.

Common Barriers for Nurses

- Nurses often have concerns similar to patient (such as with choking while supine), and may lack in-depth understanding of the SSR or the rationale supporting them. This may lead to lack of knowledge and feeling unprepared to address questions or problems.
- Inconsistent safe sleep practices among staff can lead to conflict and tension among the healthcare teams, and confused parents (such as when one HCP issues an unsafe behavior and the next addressed it.

Organizational barriers such as lack of (a) education, (b) resources, technology, (c) policy and guidelines, (d) time, or (e) leadership support can decrease morale and burnout.

Recommendations for Nurses in Hospitals and Healthcare Organizations

While no studies have reported complete success implementing safe sleep interventions, many organizations have reported significant improvements in both nursing practice and parent adherence to the SSR when comprehensive system-wide programs are implemented (see Table 3 for hospital-based projects). Recommendations for implementing comprehensive system-wide projects are as follows:

- Utilize a QI method such as the Institute for Healthcare Improvement's Model for Improvement which uses the Plan-Do-Study-Act Cycle method.

Definitions

- Bed-sharing is defined as an infant sleeping the same space with another person, including in a bed, recliner, couch, or armchair.
- Cocooning is a lesser term used in the literature and refers to either room sharing or bed-sharing situations. The bed-sharing is preferred term is more specific.
- Room-sharing is defined as an infant sleeping in the same room as the adult, but on a separate sleep surface, such as in a bassinet, preferably at arm's reach from the adult.
Counting the Cost

Compared to other life-saving interventions, the costs associated with potentially preventing sleep-related infant deaths are minimal. Here are some cost considerations for a hospital-based project:

- Time for collaborative, interprofessional teams to develop, implement, and monitor project interventions.
- Providing comprehensive safe sleep education to all staff and associates who care for infants.
- Development and implementation of infant sleep policies and guidelines.
- Development of summary sheet for staff to use with parents.

Many excellent summaries for both staff and parent education have been developed and are available online for free or for a nominal cost. Cribs for Kids offers detailed resources for hospital projects (see Table 4).

How this Guideline was Developed

Objective

The aim of this project is to provide a critically appraised evidence-based CPG that is informative and practical. The target audience is nurses and perinatal nurse leaders seeking to implement effective safe sleep educational interventions within hospitals and other healthcare organizations, such as clinics and birthing centers.

Methods Used

- A comprehensive literature search was conducted focusing primarily on locating all studies and papers related to safe sleep educational interventions utilized in hospitals, as well as descriptive studies to assist in understanding the barriers. General articles related to SIDS, the American Academy of Pediatrics policy statements, and SUD risk factors were also searched.
- Search terms: sudden infant death syndrome, SIDS, safe sleep, sudden infant death syndrome, infant, education, intervention, and hospital. The term bed share and bed-sharing was combined with the controlled vocabulary term sudden infant death.
- Database searched: CINHAL Plus, MEDLINE, PsychINFO, and EMBASE. The Cochrane library and National Guidelines Clearinghouse were searched but rendered no applicable results. Reference lists were manually searched for other/older relevant studies.
- General results: Approximately 40 articles were reviewed related to safe sleep education or interventions, and 15 related to bed-sharing. Strengths and limitations: Because of the nature of SIDS prevention interventions, randomized controlled trials are generally not appropriate due to ethical reasons as would be created by withholding possible lifesaving information from a control group. Therefore, most recommendations for interventions in this CPG are based on quasi-experimental and translational implementation type research, such as from quality improvement project designs.
- Some strengths noted in the literature are as follows: one recent systematic review of 25 years of safe sleep interventions, one systematic narrative synthesis related to reasons for bed-sharing, two narrative reviews, nine hospital-based translational/implementation studies, and multiple descriptive studies, both quantitative and qualitative, looking at the barriers to safe sleep, including bed-sharing. Recommendations were formulated through a synthesis of applicable literature and reviewed by a team of peer reviewers (see box below).
- Procedure for updating: This CPG is planned to be updated a minimum of every five years, and sooner if new relevant evidence or recommendations are published.
- Editorial independency: The author reports no conflicts of interest or relevant financial relationships.

A huge THANK YOU to everyone who has shared in this project. I am convinced the information in this document has the potential to save many babies from a needless death.

Imported Publications for Review

1. American Academy of Pediatrics (2011a and b) - Policy and technical reports on SIDS/SUID and safe infant sleep
3. Moon et al. (2018) - Narrative review of sleep interventions
4. Vennstrom et al. (2017) - Meta-analysis of back sleeping and SIDS risk
5. Carpenter et al. (2013) - Individual level statistical analysis using five combined large case control studies of SUID risk of bed-sharing with breastfed babies with no other risk factors and when fathers breastfed, drank alcohol, or used illegal drugs.
6. Miller-Selle et al. (2016) - Systematic narrative review of literature on parental back sleeping
7. Sam Ward et al. (2018) - Systematic narrative synthesis of non-back mother-infant bed-sharing
8. Longaker et al (2018) - Qualitative study exploring effective healthcare organizational change efforts. Authors provide helpful checklists to assist leaders in change efforts.

Review/Pilot Team Members:

Catherine Ehrli, CNM MS (AWHONN)
Laura L. Nuchterling, DNS, RNP, CNEU (Northern Arizona University)
Connie S. Miller, DNS, CRN, RNP, COCE (University of Arizona)
Melissa Welsh, MSN, RNP, COCE (University of Arizona/Saint Joseph's Hospital)
Lynne Young, DNS, RNP-G (St. Joseph's Hospital, Tucson, AZ)
Melfisa M. Okinami, PhD, RNP, COCE (University of Arizona)
Darrin L. Silver, MA-Communications (University of Arizona, Steele Children's Research Center)
Noami Alam, BA, RNP-CM, ED (Sunrise Pregnancy Care Center)
Appendix G

Practice Guideline Appraisal Instrument Questions

Demographic Questions

1. Age: a. 20-30, b. 31-40, c. 41-50, d. >50
2. Highest level of education: a. ADN/diploma, b. Bachelor’s, c. Master’s, d. DNP, e. PhD, f. other doctorate, g. APRN
3. Which role(s) best describe(s) your current work? Check all that apply: bedside/staff nurse, clinical/staff educator, child-birth/parenting educator, lactation consultant, certified nurse midwife, manager, director, nurse executive, faculty with perinatal nurse experience
4. Perinatal nurse experience: a. none, b. up to 5 years, c. 5-10 years, d. 10-20 years, e. > 20 years
5. Current practice location: a. hospital, b. clinic, c. birthing center, d. other
6. If you work in a hospital setting, which area best describes where you work? Check all that apply: L&D, mother/baby, well-newborn, NICU, pediatrics, lactation, childbirth education, antepartum testing/triage, other
7. How many births/year does your facility have? a. <500, b. 500-1000, c. 1001-2000, d. 2001-3000, e. 3001-4000, f. >4000

AGREE II - Appraisal Questions

Using a 7-point Likert Scale (strongly disagree to strongly agree)

Domain 1 - SCOPE AND PURPOSE

1. The overall objective of the guideline is specifically described
2. The health issue covered by the guideline is specifically described.
3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.

Comments box #1:

Domain 2 - STAKEHOLDER INVOLVEMENT

4. The author included other relevant professionals in the guideline development
5. The target users of the guideline are clearly defined.

Comments box #2:

Domain 3 - RIGOR OF DEVELOPMENT

6. Systematic methods were used to search for evidence.
7. The strengths and limitations of the body of evidence are clearly described.
8. The health benefits and risks have been considered in formulating the recommendations.
9. There is an explicit link between the recommendations and the supporting evidence.
10. A procedure for updating the guideline is provided.

Comments box #3:

**DOMAIN 4 - CLARITY OF PRESENTATION**
11. The recommendations are specific and unambiguous.
12. The different options for management of the condition or health issue are clearly presented.
13. Key recommendations are easily identifiable.

Comments box #4:

**DOMAIN 5 – APPLICABILITY**
14. The guideline describes facilitators and barriers to its application.
15. The guideline provides advice and/or tools on how the recommendations can be put into practice.
16. The potential resource/cost implications of applying the recommendations have been considered.
17. The guideline presents monitoring and/or auditing criteria.

Comments box #5:

**OVERALL GUIDELINE ASSESSMENT**
18. Rate the overall quality of this guideline (lowest possible to highest possible)
19. I would recommend this guideline for use (no-yes-yes with modifications)

Comments box #6: *Suggestions for modifications*

Comments box #7: *Please comment on clarity, usefulness, or areas of concern. Please be specific and include page #.*

**8-WEEK FOLLOW-UP QUESTION**
20. Since reading the Safe Infant Sleep Practice Guideline, have you taken, or considered taking action on your unit or organization to improve your infant sleep practices? (no-yes-not applicable)

Comment box #8: *Please comment on (a) actions/changes you have made, or (b) you see are needed, and/or (c) barriers you anticipate having implementing a safe sleep change initiative.*
Appendix H

IRB Letter of Exemption

To: Sharon C Hitchcock, MSN, RNC
From: NAU IRB Office
Date: October 24, 2016

Project: Safe Infant Sleep Clinical Practice Guideline - Critical Appraisal Survey
Project Number: 937686-1
Submission: New Project
Review Level: Administrative Review
Action: RESEARCH - NOT HSR
Project Status: Research - Not HSR

The project listed above does not require oversight by the Northern Arizona University Institutional Review Board because the project does not meet the definition of 'research' and/or 'human subject'.

- **Not Research as defined by 45 CFR 46.102(d)**: As presented, the activities described above do not meet the definition of research as cited in the regulations issued by the U.S. Department of Health and Human Services which state that "research means a systematic investigation, including research development, testing and evaluation, designed to contribute to generalizable knowledge".

- **Not Human Subjects Research as defined by 45 CFR 46.102(f)**: As presented, the activities described above do not meet the definition of research involving human subjects as cited in the regulations issued by the U.S. Department of Health and Human Services which state that "human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains data through intervention or interaction with the individual, or identifiable private information".

Note: Modifications to projects not requiring human subjects review that change the nature of the project should be submitted to the Human Research Protection Program (HRPP) for a new determination (e.g. addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the research question). Please contact the HRPP to consult on whether the proposed changes need further review.

Northern Arizona University maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #0000357).
Appendix I

Informed Consent Form from Online Survey

Informed Consent:
You are being invited to participate in a project titled Promoting Safe Infant Sleep: The Creation and Appraisal of a Clinical Practice Guideline. This study is being done by Sharon C. Hitchcock, a doctoral student at Northern Arizona University.

The clinical practice guideline is available here: Safe Sleep Clinical Practice Guideline

The overarching goal of the project is the creation and appraisal of an evidence-based clinical practice guideline (CPG) on the topic of safe infant sleep. The purpose of this appraisal is to gather a wide variety of perinatal nurse-leaders to assess the quality and usefulness of the guideline. If you agree to take part in this study, you will be asked to complete an online survey/questionnaire. This survey/questionnaire will ask about the clarity, rigor, and usefulness of the tool.

This survey will take approximately 15 minutes to complete (plus the time it takes to read the CPG). The follow-up survey question will be sent in about 4-6 weeks, and will take about 5 minutes to complete.

You may not directly benefit from this project; however, my hope is that your participation in the study will lead to a published clinical practice guideline that is of utmost quality and usefulness for perinatal nurses and nurse-leaders in the future.

I believe there are no known risks associated with this project; however, as with any online related activity the risk of a breach of confidentiality is always possible. For this survey, responses will be pooled and thus anonymous, and to the best of my ability your answers in this study will remain confidential.

Your participation in this study is completely voluntary and you can withdraw at any time. You are free to skip any question that you choose.

If you have questions about this project you may contact Sharon at 520-404-9748, sch77@nau.edu or schitchcock@email.arizona.edu.

By submitting this survey, I affirm that I have read the description of the project and voluntarily consent to participate.
Appendix J

Demographic Question Results

Characteristics of participants

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<td>Years of perinatal nursing experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 5 years</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>&gt;5 -10 years</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>&gt;10 – 20 years</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>&gt;20 years</td>
<td>8</td>
<td>53.3</td>
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<tr>
<td>Highest degree earned</td>
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<tr>
<td>Associates</td>
<td>1</td>
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</tr>
<tr>
<td>Bachelor’s</td>
<td>8</td>
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<td>Master’s</td>
<td>5</td>
<td>33.3</td>
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<tr>
<td>Master’s with advanced practice degree</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Doctorate - DNP</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Doctorate - PhD</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Doctorate - Other</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

Practice Setting

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current practice location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital</td>
<td>15</td>
<td>100.0</td>
</tr>
<tr>
<td>Birthing center</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clinic</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
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</tbody>
</table>

Number of deliveries per year in organization

<table>
<thead>
<tr>
<th></th>
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<th>%</th>
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<tbody>
<tr>
<td>&lt;500</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>500-1000</td>
<td>2</td>
<td>13.3</td>
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<tr>
<td>1001-2000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2001-3000</td>
<td>6</td>
<td>40.0</td>
</tr>
<tr>
<td>3001-4000</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>&gt;4000</td>
<td>6</td>
<td>40.0</td>
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</tbody>
</table>

Current hospital unit locations (able to choose more than one)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Mother-baby unit</td>
<td>11</td>
<td>73.3</td>
</tr>
<tr>
<td>Well newborn nursery</td>
<td>9</td>
<td>60.0</td>
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</table>
### Labor and Delivery Setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor and delivery</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>Neonatal intensive care</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>Lactation</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>Childbirth education</td>
<td>3</td>
<td>20.0</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>Antepartum testing/triage</td>
<td>1</td>
<td>6.7</td>
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<tr>
<td>Other hospital setting</td>
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<td>-</td>
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</tbody>
</table>

### Current Job Role

<table>
<thead>
<tr>
<th>Current role (able to choose more than one)</th>
<th>N</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Manager</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>Bedside/staff nurse</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>Clinical/staff educator</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>Childbirth/parent educator</td>
<td>3</td>
<td>20.0</td>
</tr>
<tr>
<td>Director</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Advanced practice nurse</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Lactation consultant</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Faculty with perinatal nurse experience</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Past perinatal leadership experience</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Certified nurse midwife</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nurse executive</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>-</td>
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</table>
Appendix K

Domain Standardized Percentage Score Results

<table>
<thead>
<tr>
<th>Appraisal Domain</th>
<th>Standardized Percentage Score (SPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain 1 – Scope and Purpose</td>
<td>95.6</td>
</tr>
<tr>
<td>Domain 2 – Stakeholder Involvement</td>
<td>96.1</td>
</tr>
<tr>
<td>Domain 3 – Rigor of Development</td>
<td>92.7</td>
</tr>
<tr>
<td>Domain 4 - Clarity of Presentation</td>
<td>95.9</td>
</tr>
<tr>
<td>Domain 5 – Applicability</td>
<td>94.3</td>
</tr>
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</table>
# Individual Appraisal Item Results (Questions 1-17)

<table>
<thead>
<tr>
<th>CPG Appraisal Questions (Standardized Percentage Score)</th>
<th>Strongly Disagree (1) N (%)</th>
<th>Neither disagree nor agree (4) N (%)</th>
<th>Somewhat agree (5) N (%)</th>
<th>Agree (6) N (%)</th>
<th>Strongly Agree (7) N (%)</th>
<th>Median, (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domain 1 – Scope and Purpose (95.6%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. The overall objective…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (26.7)</td>
<td>11 (73.3)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>2. The health issue covered…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (26.7)</td>
<td>11 (73.3)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>3. The patient population…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (26.7)</td>
<td>11 (73.3)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td><strong>Domain 2 – Stakeholder Involvement (96.1%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The author included other relevant…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (26.7)</td>
<td>11 (73.3)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>5. The target users were defined</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3 (20.0)</td>
<td>12 (80.0)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td><strong>Domain 3 – Rigor or Development (92.7%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Systematic methods were used…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5 (33.3)</td>
<td>10 (66.7)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>7. The strengths and limitations…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6 (40.0)</td>
<td>9 (60.0)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>8. The health benefits and risks…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (26.7)</td>
<td>11 (73.3)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>9. There is an explicit link between…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5 (33.0)</td>
<td>10 (66.7)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>10. A procedure for updating is provided…</td>
<td>0</td>
<td>2 (13.3)</td>
<td>1 (6.7)</td>
<td>5 (33.0)</td>
<td>7 (46.7)</td>
<td>6 (4-7)</td>
</tr>
<tr>
<td><strong>Domain 4 - Clarity of Presentation (95.9%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. The recommendations are specific</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (26.7)</td>
<td>11 (73.3)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>12. The different options are clearly…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (26.7)</td>
<td>11 (73.3)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>13. Key recommendations are easily…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3 (20.0)</td>
<td>12 (80.0)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td><strong>Domain 5 – Applicability (94.3%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. The guideline describes facilitators …</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6 (40.0)</td>
<td>9 (60.0)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>15. The guideline provides advice…</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (26.7)</td>
<td>11 (73.3)</td>
<td>7 (6-7)</td>
</tr>
<tr>
<td>16. The potential resource/cost need…</td>
<td>0</td>
<td>0</td>
<td>1 (6.7)</td>
<td>4 (26.7)</td>
<td>10 (66.7)</td>
<td>7 (5-7)</td>
</tr>
<tr>
<td>17. The guideline presents monitoring…</td>
<td>0</td>
<td>0</td>
<td>2 (13.3)</td>
<td>4 (26.7)</td>
<td>9 (60.0)</td>
<td>7 (5-7)</td>
</tr>
</tbody>
</table>
### Appendix M

Individual Appraisal Item Results (Questions 18-20)

#### 18. Overall Guideline Assessment Score Using a 7-point Likert Scale

<table>
<thead>
<tr>
<th>Quality Level</th>
<th>N (%)</th>
<th>Median, (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest Possible Quality (1)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Low Quality (2)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Somewhat Low Quality (3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Neither High nor Low Quality (4)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Somewhat High Quality (5)</td>
<td>6 (40.0)</td>
<td></td>
</tr>
<tr>
<td>High Quality (6)</td>
<td>9 (60.0)</td>
<td></td>
</tr>
<tr>
<td>Highest Possible Quality (7)</td>
<td>7 (6-7)</td>
<td></td>
</tr>
</tbody>
</table>

#### 19. I would recommend this guideline for use...

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>N (%)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, with modifications</td>
<td>1 (6.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14 (93.3)</td>
<td></td>
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</tbody>
</table>

#### 20. 8-week Follow-up Question: Have you taken, or considered taking action on your unit...

<table>
<thead>
<tr>
<th>Action Taken</th>
<th>N (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>1 (10.0)</td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9 (90.0)</td>
<td></td>
</tr>
</tbody>
</table>
## Domain 1 – Scope and Purpose

1. “Need to consider the small rural population not delivered in traditional settings.”
2. “Interesting facts brought forward, backed by references, easy to read, good reference for Nursery staff to use when teaching patients.”

<table>
<thead>
<tr>
<th>Domain 2 – Stakeholder Involvement</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain 3 – Rigor of Development</td>
<td>None</td>
</tr>
<tr>
<td>Domain 4 - Clarity of Presentation</td>
<td>None</td>
</tr>
<tr>
<td>Domain 5 – Applicability</td>
<td>None</td>
</tr>
</tbody>
</table>

### Comments from Suggestions for Modifications question

3. “The new AAP recommendations should probably be included: SIDS and Other Sleep-Related Infant Deaths: Updated 2016 Recommendations for a Safe Infant Sleeping Environment. Otherwise, excellent work!”
4. “Need to consider integration of Baby Friendly guidelines as they relate to use of pacifiers.”

### Comments from clarity, usefulness, or areas of concern question

5. “I appreciated your inclusion of all health care workers as the population needing education, since it is not only nurses who come in contact with the newborn population. Your discussion of common barriers for nurses is excellent! Also, providing websites and articles to assist with education would be extremely helpful to anyone needing to create/institute a safe sleep policy.”
6. “My only suggestion would be to maybe mention the most recent (2016) AAP recommendation to room share for 6-12 months. The 2011 recommendations are referenced, but I think the recent recommendations would add value to the argument for room sharing.”

### Comments from 8-week follow-up question: “Please comment on (a) actions/changes made, (b) changes you see are needed, and/or (c) barriers you anticipate

7. “Upon admission to the mother/baby unit, parents are educated on safe sleep recommendations. If I see an infant in an unsafe sleeping environment, I re-educate the parents, and demonstrate safe sleep recommendations, including removing blankets, placing the infant on his/her back, and removing excessive layers of clothing.”
8. “Review of safe sleep practices with staff members - reinforce importance of patient
9. “education regarding safe sleep practices”
10. “Presented info to education committee for future in-service”
11. “as a staff nurse I have been more consistent with modeling safe sleep practices at my place of employment.”
12. “We have been discussing and trying to improve this for the last year or so, but I like the suggestions for the staff and from the nurse's side, how they can portray it to the parents.”
13. “Since we were a pilot hospital for the ABC cards, we have incorporated Safe Sleep practices into our standard of care at many phases during the patient's hospital stay: upon arrival to the unit, during each shift change a reminder is given about safe sleep, it is discussed in the discharge class, we give a Halo sleep sack to each parent at discharge and talk about it in the class, and we also offer a free Pack n Play to anyone who does not have a safe place for baby to sleep.”
14. “I appreciate you opening my eyes about education of parents and taking the teaching method of helping families choose how to lessen the risk of SIDS in a way that would help their particular situation. Is easy to teach the "abide by all recommendations" approach, but this may turn them off of listening about reducing the risk of SIDS all together. I teach safe sleep classes, mandatory to all new hires RNs and Nurse technicians. We are a safe sleep Model of Excellence Hospital. Even with this title, we still have a lot of teaching to do, this education is needed in almost every couplet situation. It is very important work. I have been a nurse for 33 years and we never really addressed safe sleep to parents until the last 5 years or so.”
15. “I have become more active in teaching and modeling safe sleep at the bedside.
16. “Our barriers include the incorrect information the patients here in the community including from their family, friends and some newborn support groups. Many of these groups encourage co-sleeping, and many fathers continue to sleep on the couch with baby on their chest.”
17. “Staff/patient education. Always face resistance from some staff and family members resistant to change.”